APPENDIX B INSTALLATION INSTRUCTIONS

CS-KS12NB41 & CZ-18BT1U + CU-KS12NK1A
CS-KS18NB4UW & CZ-18BT1U + CU-KS18NKU
CS-KS18NB4UW & CZ-18BT1U + CU-KS18NKUA

(852-6-4190-574-00-1)

INSTALLATION INSTRUCTIONS
Split System Air Conditioner

Panasonic®

This air conditioner uses the refrigerant R410A.

NOTE External diameter of service port R410A: 5/16"

Model Combinations

Combine indoor and outdoor units only as listed below.

Model No.

Indoor Unit	Outdoor Unit
CS-KS12NB41	CU-KS12NK1A
Power Source: 60 Hz, single-phase, 115 V	
CS-KS18NB4UW	CU-KS18NKU
	CU-KS18NKUA
Power Source: 60 Hz, single-phase, 230/208 V	

Ceiling Panel
CZ-18BT1U

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IMPORTANT!
Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- To prevent possible hazards from insulation failure, the unit must be grounded.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing…

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

…In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

…In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

Keep the fire alarm and the air outlet at least 1.5 m away from the unit.

…In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- When performing piping work do not mix air except for specified refrigerant (R410A) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.
- Refrigerant gas leakage may cause fire.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.
- Ventilate the room well, in the event that refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.

- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts. Handle liquid refrigerant carefully as it may cause frost-bite.

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

Others

CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- Do not sit or step on the unit, you may fall down accidentally.
- Do not stick any object into the FAN CASE. You may be injured and the unit may be damaged.

NOTE

The illustrations are based on the typical appearance of a standard model. Consequently, the shape may differ from that of the air conditioner that you are installing.

1. General

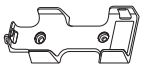
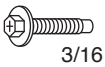
This booklet briefly outlines where and how to install the air conditioning system. Please read over the entire set of instructions for the indoor and outdoor units and make sure all accessory parts listed are with the system before beginning.

1-1. Tools Required for Installation (not supplied)

1. Standard screwdriver
2. Phillips head screwdriver
3. Knife or wire stripper
4. Tape measure
5. Carpenter's level
6. Sabre saw or key hole saw
7. Hacksaw
8. Core bits
9. Hammer
10. Drill
11. Tube cutter
12. Tube flaring tool
13. Torque wrench
14. Adjustable wrench
15. Reamer (for deburring)

1-2. Accessories Supplied with Unit

Table 1

Parts	Figure	Q'ty	Remarks	Parts	Figure	Q'ty	Remarks
Washer		8	For temporarily suspending indoor unit from ceiling	Truss head screw	3/16×13/32" (5×10mm)	4	For full-scale installation diagram
Flare insulation	1/8"(T3) 3/16"(T5)	2 set	For wide / narrow tube connection	Drain hose	5-1/2"(L140)	1	For unit & PVC tube connection
Insulation tape	3/32"(T2)	2	For wide / narrow tube / flare nut connection	Hose band		2	For drain hose connection
Vinyl tie		8	For flare / drain insulating connection	Tapping screw	Truss-head Phillips 5/32×5/8" (4×16mm)	2	
Drain hose insulation	13/32"(T10)	1	For drain tube connection	Cushion rubber		4	Packed in the outdoor unit
Remote controller		1		Truss head screw	5/32×15/32" (4×12mm)	4	Packed in the ceiling panel
Remote control holder		1		Special screw	 3/16×1-9/16" (5×40mm)	4	
AAA alkaline battery		2					
Full-scale installation diagram		1	Printed on container box				

- Use M10 or 3/8" for suspension bolts.
- Suspension bolts and nuts (locally purchased)

1-3. Optional Copper Tubing Kit

Copper tubing for connecting the outdoor unit to the indoor unit is available in kits which contain the narrow and wide tubing, fittings and insulation. Consult your nearest sales outlet or air conditioning workshop.

1-4. Type of Copper Tube and Insulation Material

If you wish to purchase these materials separately from a local source, you will need:

1. Deoxidized annealed copper tube for refrigerant tubing as detailed in Table 2.
   Cut each tube to the appropriate lengths 1' to 1'4" (30 cm to 40 cm) to dampen vibration between units.
2. Foamed polyethylene insulation for the specified copper tubes as required to precise length of tubing. Wall thickness of the insulation should be not less than 5/16" (8 mm).
3. Use insulated copper wire for field wiring. Wire size varies with the total length of wiring. Refer to 3-7. Wiring Instructions for details.

Table 2

Model	Narrow Tube		Wide Tube	
	Outer Dia.	Thickness	Outer Dia.	Thickness
CS-KS12NB41	1/4" (6.35 mm)	0.0314" (0.8 mm)	3/8" (9.52 mm)	0.0314" (0.8 mm)
CS-KS18NB4UW	1/4" (6.35 mm)	0.0314" (0.8 mm)	1/2" (12.70 mm)	0.0314" (0.8 mm)

CAUTION

Check local electrical codes and regulations before obtaining wire. Also, check any specified instructions or limitations.

1-5. Additional Materials Required for Installation

1. Refrigeration (armored) tape
2. Insulated staples or clamps for connecting wire (See local codes)
3. Putty
4. Refrigeration lubricant
5. Clamps or saddles to secure refrigerant tubing

2. Installation Site Selection

2-1. Indoor Unit

WARNING **To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow.**

AVOID:

- direct sunlight.
- nearby heat sources that may affect performance of the unit.
- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist.

DO:

- select an appropriate position from which every corner of the room can be uniformly cooled.
- select a location that will hold the weight of the unit.
- select a location where tubing and drain hose have the shortest run to the outside.
- allow room for operation and maintenance as well as unrestricted air flow around the unit. (Fig. 1)
- install the unit within the maximum elevation difference (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in Table 3 and Fig. 2.
- install the indoor unit more than 3.3' (1 m) away from any antenna or power lines or connecting wires used for television, radio, telephone, security system, or intercom. Electrical noise from any of these sources may affect operation.

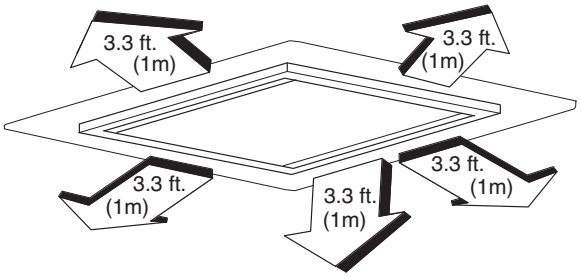


Fig. 1

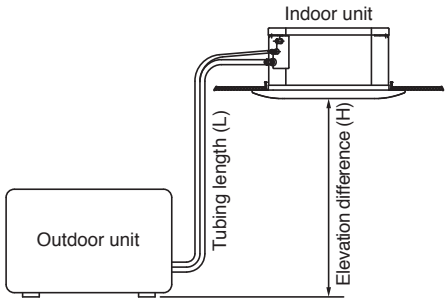


Fig. 2

CAUTION

Air delivery will be degraded if the distance from the floor to the ceiling is greater than 10 ft. (3 m).

Table 3

Model	Max. Allowable Tubing Length at Shipment (ft.)	Limit of Tubing Length (L) (ft.)	Limit of Elevation Difference (H) (ft.)	Required Amount of Additional Refrigerant (oz./ft.)*
CS-KS12NB41	25	65	23	0.16
CS-KS18NB4UW	25	100	50	0.27

* If total tubing length becomes 25 to 65 ft. (Max.) or 25 to 100 ft. (Max.), charge additional refrigerant (R410A) by 0.16 or 0.27 oz./ft. No additional charge of compressor oil is necessary. For more detailed charging information, refer to the Technical & Service Manual.

2-2. Outdoor Unit

AVOID:

- heat sources, exhaust fans, etc. (Fig. 3)
- damp, humid or uneven locations.

DO:

- choose a place as cool as possible.
- choose a place that is well ventilated.
- install in a location where at least two sides are unobstructed, so that the flow of air at the intake port or exhaust port is not blocked, and so that sufficient space is ensured for maintenance to be carried out without trouble. In general the top also must be unobstructed. (Figs. 4a and 4b)
- provide a solid base (level concrete pad, concrete block, 4" × 1'4" (10 × 40 cm) beams or equal), a minimum of 4" (10 cm) above ground level to reduce humidity and protect the unit against possible water damage and decreased service life. (Fig. 5a)
- install cushion rubber under unit's feet to reduce vibration and noise. (Fig. 5b)
- use lug bolts or equal to bolt down unit, reducing vibration and noise.
- install in a location where no antenna of a television or radio exists within 10' (3 m).

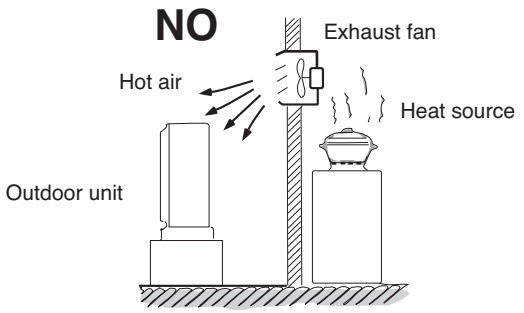


Fig. 3

(CU-KS12NK1A)

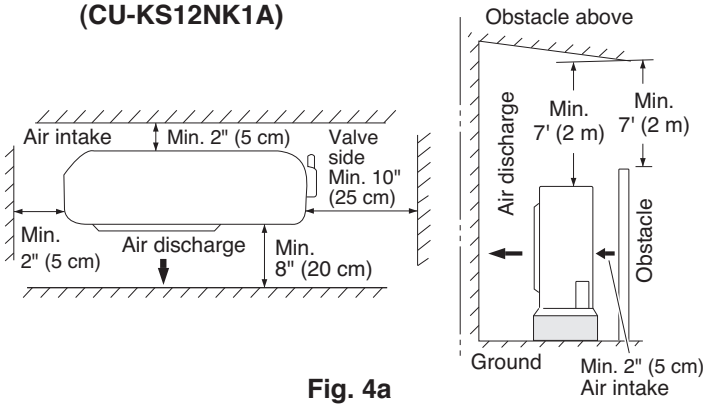


Fig. 4a

(CU-KS18NKU, CU-KS18NKUA)

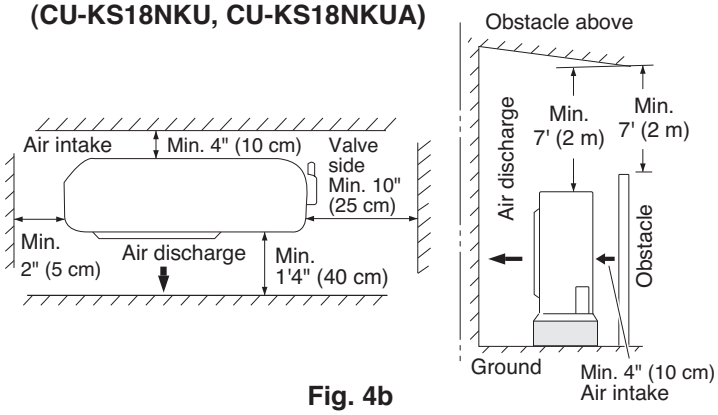


Fig. 4b

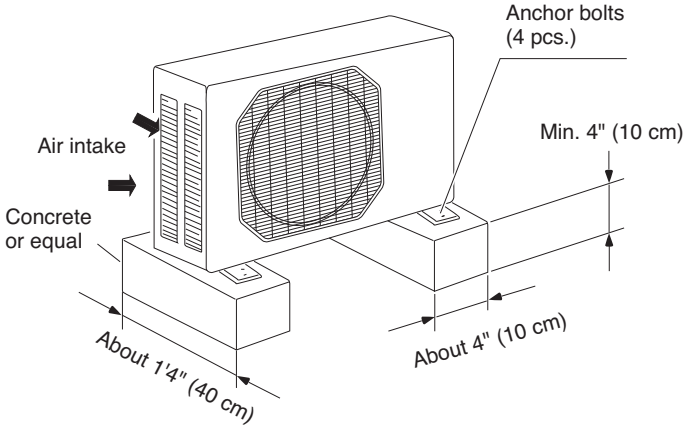


Fig. 5a

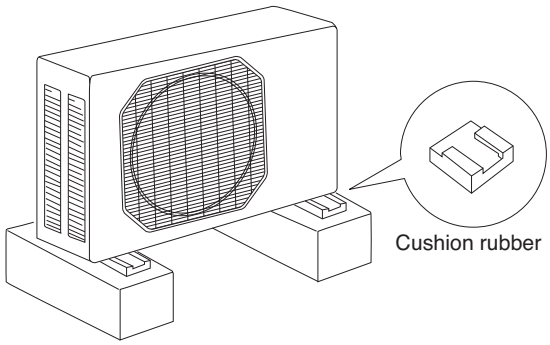


Fig. 5b

2-3. Baffle Plate for the Outdoor Unit (Low Ambient Cooling models only)

NOTE

It is recommended to use baffle plates for models CU-KS12NK1A and CU-KS18NKUA. The baffle plates are not normally required for the other models.

When the outdoor unit is installed in a position exposed to strong wind (such as seasonal winds with low air temperature in winter), baffle plates must be installed on the outdoor unit. (Fig. 5c)

This unit is designed so that the fan of the outdoor unit runs at low speed when the air conditioner is operated at low outdoor air temperatures. When the outdoor unit is exposed to strong wind, the system pressure drops because of the freeze protector.

Install a pair of windbaffle plates at the front and back of the outdoor unit if it will be subject to strong wind during the winter. (Figs. 5c to 5k)

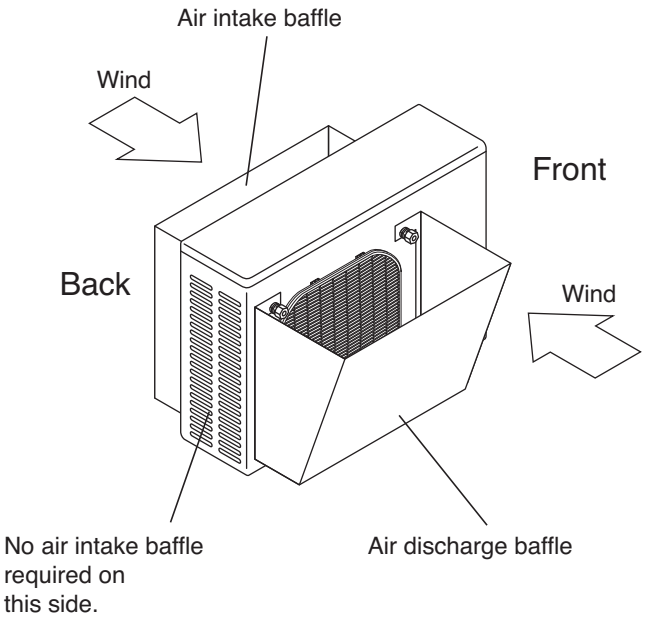


Fig. 5c

■ **CU-KS12NK1A**

(1) Recommended dimensions of the baffle plates

Air Intake Baffle

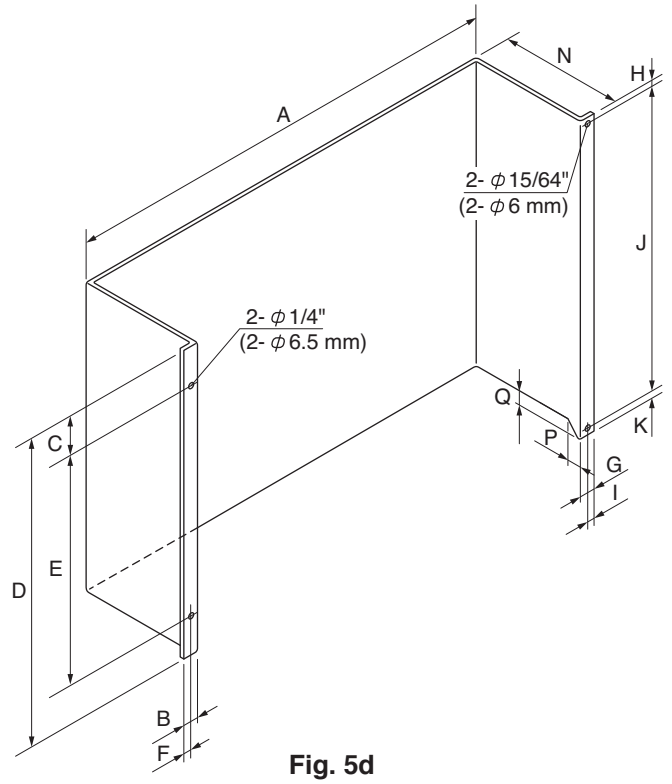


Fig. 5d

Air Discharge Baffle

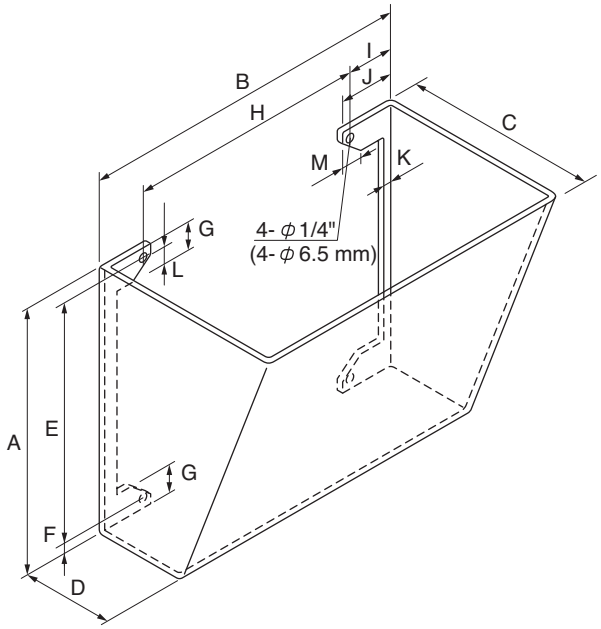


Fig. 5e

For Air Intake

Model \ Dimensions		A	B	C	D	E	F	G	H	I	J	K	N	P	Q
CU-KS12NK1A	(inch)	21-21/32	25/32	2-5/32	17-5/16	13	25/64	19/32	23/64	19/64	17-3/8	25/64	5-29/32	25/32	25/32
	(mm)	550	20	55	440	330	10	15	9	7.5	441	10	150	20	20

For Air Discharge

Model \ Dimensions		A	B	C	D	E	F	G	H	I	J	K	L	M
CU-KS12NK1A	(inch)	19-3/32	20-3/32	13-25/32	5-29/32	17-17/32	25/32	2-5/32	14-9/16	2-3/4	3-11/32	19/32	1-3/8	1-3/8
	(mm)	485	510	350	150	445	20	55	370	70	85	15	35	35

Material to be used: Metal plate with corrosion protection treatment

Plate thickness: 0.0394 to 0.0472" (1.0 to 1.2 mm)

(2) Parts required (locally purchased except for screws)

Air Intake Baffle

Item	Q'ty	Remarks
Baffle plate	1	
Screw 5/32 × 15/32" (4 × 12 mm) tapping	2	Attached to outdoor unit
Bolt 15/64 × 19/32 – 25/32" (M6 × 15 – 20 mm)	2	
Nut 15/64" (M6)	2	
Washer	2	
Spring washer	2	

Air Discharge Baffle

Item	Q'ty	Remarks
Baffle plate	1	
Bolt 15/64 × 13/32 – 19/32" (M6 × 10 – 15 mm)	4	
Nut 15/64" (M6)	4	
Washer	4	
Spring washer	4	

■ **CU-KS18NKUA**

(1) Recommended dimensions of the baffle plates

Air Intake Baffle

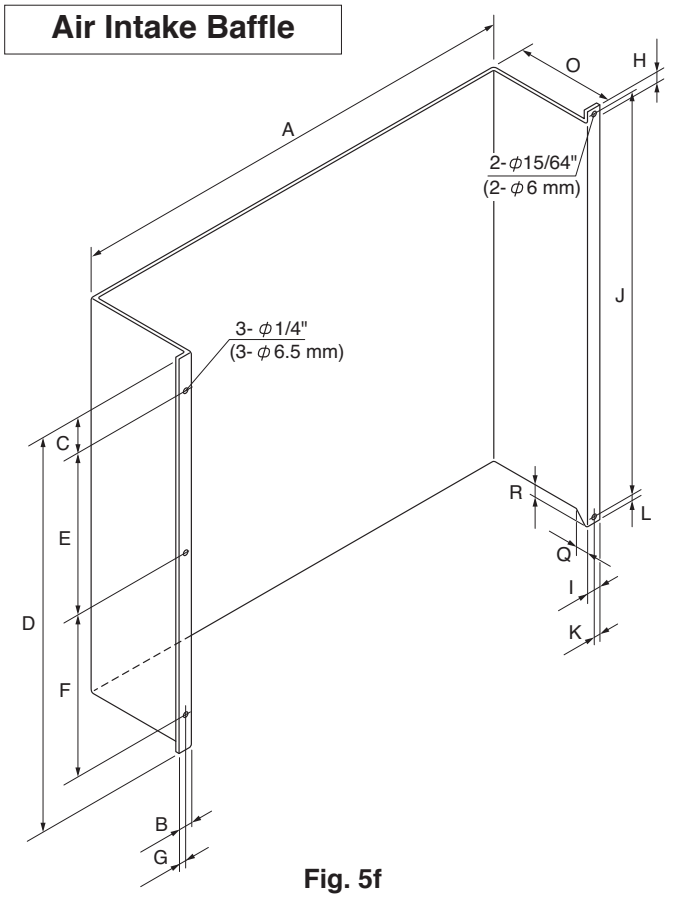


Fig. 5f

Air Discharge Baffle

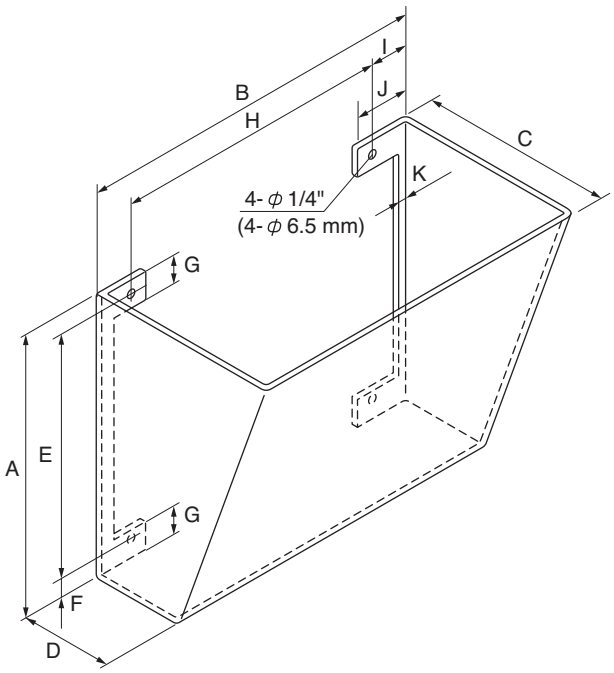


Fig. 5g

For Air Intake

Model \ Dimensions		A	B	C	D	E	F	G	H	I	J	K	L	O	Q	R
CU-KS18NKUA	(inch)	24-13/32	25/32	1-25/32	22-1/4	9-1/4	9-1/4	25/64	25/32	19/32	23-1/8	19/64	25/64	5-29/32	25/32	25/32
	(mm)	620	20	45	565	235	235	10	20	15	587	7.5	10	150	20	20

For Air Discharge

Model \ Dimensions		A	B	C	D	E	F	G	H	I	J	K
CU-KS18NKUA	(inch)	20-7/8	22-1/16	13-25/32	5-29/32	18-1/8	1-3/8	2-5/32	17-5/16	2-3/8	3-11/32	31/32
	(mm)	530	560	350	150	460	35	55	440	60	85	25

Material to be used: Metal plate with corrosion protection treatment

Plate thickness: 0.0394 to 0.0472" (1.0 to 1.2 mm)

(2) Parts required (locally purchased except for screws)

Air Intake Baffle

Item	Q'ty	Remarks
Baffle plate	1	
Screw 5/32 × 15/32" (4 × 12 mm) tapping	2	Attached to outdoor unit
Bolt 15/64 × 19/32 – 25/32" (M6 × 15 – 20 mm)	3	
Nut 15/64" (M6)	3	
Washer	3	
Spring washer	3	

Air Discharge Baffle

Item	Q'ty	Remarks
Baffle plate	1	
Bolt 15/64 × 13/32 – 19/32" (M6 × 10 – 15 mm)	4	
Nut 15/64" (M6)	4	
Washer	4	
Spring washer	4	

(3) Installation procedure

■ **CU-KS12NK1A**

1. Air Intake Baffle

(1) Left side

1. Remove the front panel from the unit.
2. Remove the panel side L, and drill 2 holes of ø1/4 inch (6.5 mm) at the prescribed position.
3. Install the windbaffle on the unit using field supply bolts and nuts.
4. Recommended bolts to be used are 15/64" (M6 ISO standard), and the recommended length of the bolts is between 19/32 – 25/32 inch (15 – 20 mm).
5. Use washers and spring washers to tightly fasten the windbaffle to the unit.

(2) Right side

1. Remove the front panel from the unit.
2. Use 2 preholes on the panel side R to install the baffle plate.
3. Remove the panel side R from the unit by removing the screws. These screws are used in step 4 below.
4. Put (sandwich) the windbaffle between the unit and the panel side R, then install the windbaffle on the unit using the above screws. Be careful not to damage the screw holes.

2. Air Discharge Baffle

1. Remove the panels front, side L and R from the unit and drill 4 holes of ø1/4 inch (6.5 mm) at the prescribed positions.
2. Install the windbaffle on the unit using field supply bolts and nuts.
3. Recommended bolts to be used are 15/64" (M6 ISO standard), and the recommended length of the bolts is between 13/32 – 19/32 inch (10 – 15 mm).
4. Use washers and spring washers to tightly fasten the windbaffle to the unit.

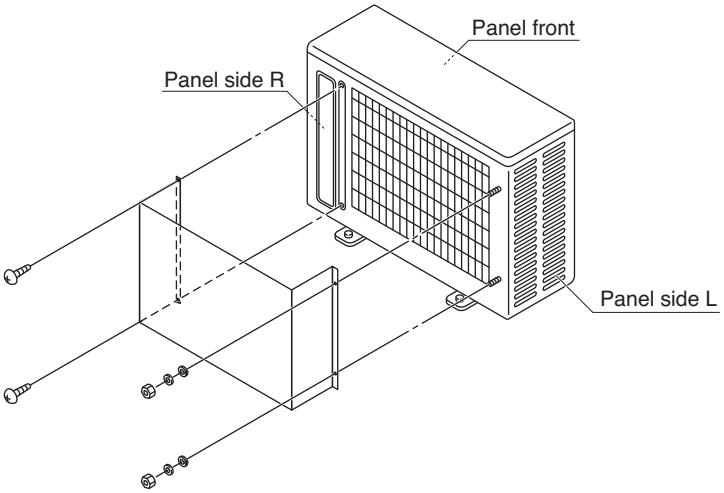


Fig. 5h

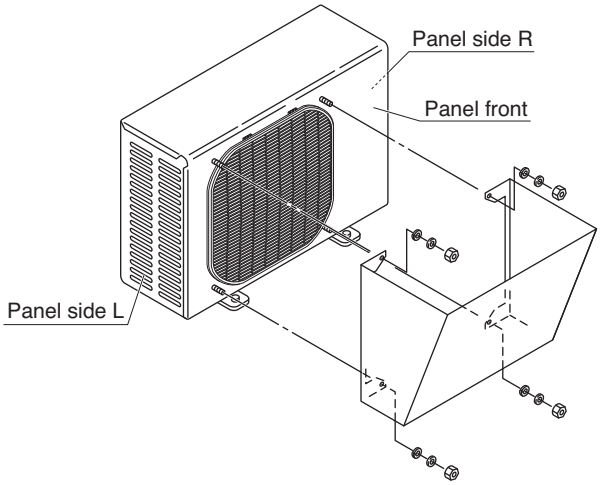


Fig. 5i

NOTE

- In order to prevent contact of the bolts and heat exchanger and other parts inside the unit, install the windbaffle using bolts from inside the unit and fasten the bolts with nuts from outside the unit.
- When the windbaffle is installed on the unit, the unit has higher wind resistance. In order to prevent the unit from falling over, anchor the legs of the unit using anchor bolts (or similar method).

■ **CU-KS18NKUA**

1. Air Intake Baffle

(1) Left side

1. Remove the top panel from the unit.
2. Remove the panel side L, and drill 3 holes of ø1/4 inch (6.5 mm) at the prescribed positions.
3. Install the windbaffle on the unit using field supply bolts and nuts.
4. Recommended bolts to be used are 15/64" (M6 ISO standard), and the recommended length of the bolts is between 19/32 – 25/32 inch (15 – 20 mm).
5. Use washers and spring washers to tightly fasten the windbaffle to the unit.

(2) Right side

1. Remove the top panel from the unit.
2. Use 2 preholes on the panel side R to install the baffle plate.
3. Remove the panel side R from the unit by removing the screws. These screws are used in step 4 below.
4. Put (sandwich) the windbaffle between the unit and the panel side R, then install the windbaffle on the unit using the above screws. Be careful not to damage the screw holes.

2. Air Discharge Baffle

1. Remove the panels front, top, side L and R from the unit and drill 4 holes of ø1/4 inch (6.5 mm) at the prescribed positions.
2. Install the windbaffle on the unit using field supply bolts and nuts.
3. Recommended bolts to be used are 15/64" (M6 ISO standard), and the recommended length of the bolts is between 13/32 – 19/32 inch (10 – 15 mm).
4. Use washers and spring washers to tightly fasten the windbaffle to the unit.

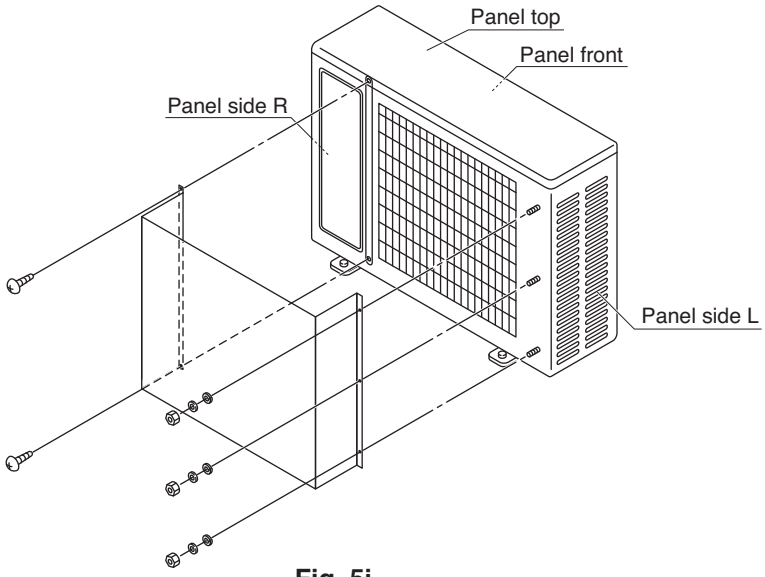


Fig. 5j

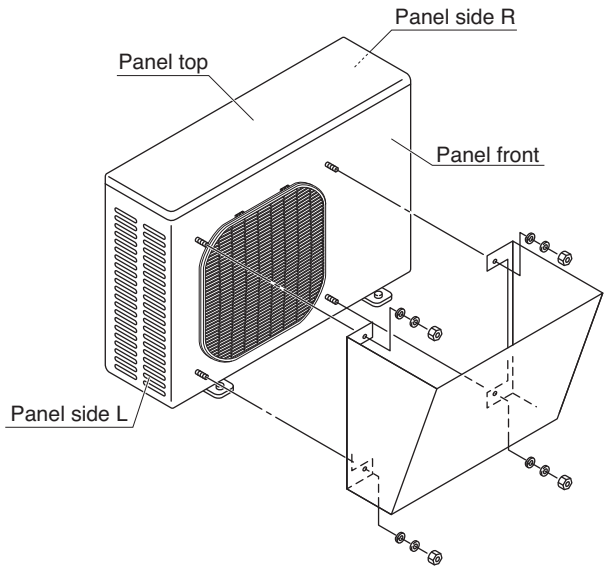


Fig. 5k

NOTE

- In order to prevent contact of the bolts and heat exchanger and other parts inside the unit, install the windbaffle using bolts from inside the unit and fasten the bolts with nuts from outside the unit.
- When the windbaffle is installed on the unit, the unit has higher wind resistance. In order to prevent the unit from falling over, anchor the legs of the unit using anchor bolts (or similar method).

(4) Precautions for installation

1. Be sure not to damage painted surfaces.
2. Finish the edges of the windbaffle to avoid cuts or injury.
3. Drilling of holes must be carefully done so that no damage is caused to external or internal parts of the unit. Particular care must be taken that drill chips do not drop into the unit.

3. How to Install the Indoor Unit

3-1. Preparation for Suspending

This unit uses a drain pump. Use a carpenter's level to check that the unit is level.

3-2. Suspending the Indoor Unit

(1) Fix the suspension bolts securely in the ceiling using the method shown in the diagrams, by attaching them to the ceiling support structure, or by any other method that ensures that the unit will be securely and safely suspended. (Fig. 6-1)

(2) Follow the diagram to make the holes in the ceiling.

(3) Determine the pitch of the suspension bolts using the supplied full-scale installation diagram. The diagram shows the relationship between the positions of the suspension fitting, unit, and panel. (Fig. 6-2)

3-3. Placing the Unit Inside the Ceiling

(1) Be sure to remove the fan protection (4pcs) for transportation before hanging up the indoor unit.

(2) When placing the unit inside the ceiling, determine the pitch of the suspension bolts using the supplied full-scale installation diagram. (Fig. 6-3)
Tubing and wiring must be laid inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing and wiring into position for connection to the unit before placing the unit inside the ceiling.

(3) The length of suspension bolts must be appropriate for a distance between the bottom of the bolt and the bottom of the unit of more than 19/32" (15 mm) as shown in the diagram. (Fig. 6-3)

(4) Thread the 3 hexagonal nuts (locally purchased) and 2 supplied washers onto each of the 4 suspension bolts as shown in the diagram. Use 1 nut and 1 washer for the upper side, and 2 nuts and 1 washer for the lower side, so that the unit will not fall off the suspension lugs. (Fig. 6-4)

(5) Adjust so that the distance between the unit and the ceiling bottom is 1/2" (13 mm) to 23/32" (18 mm). Tighten the nuts on the upper side and lower side of the suspension lug. (Fig. 6-4)

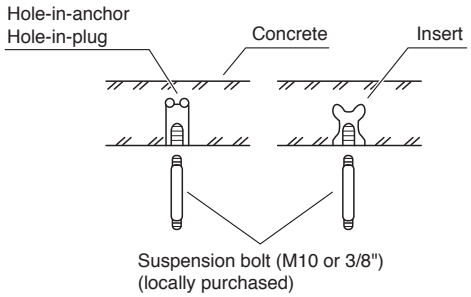


Fig. 6-1

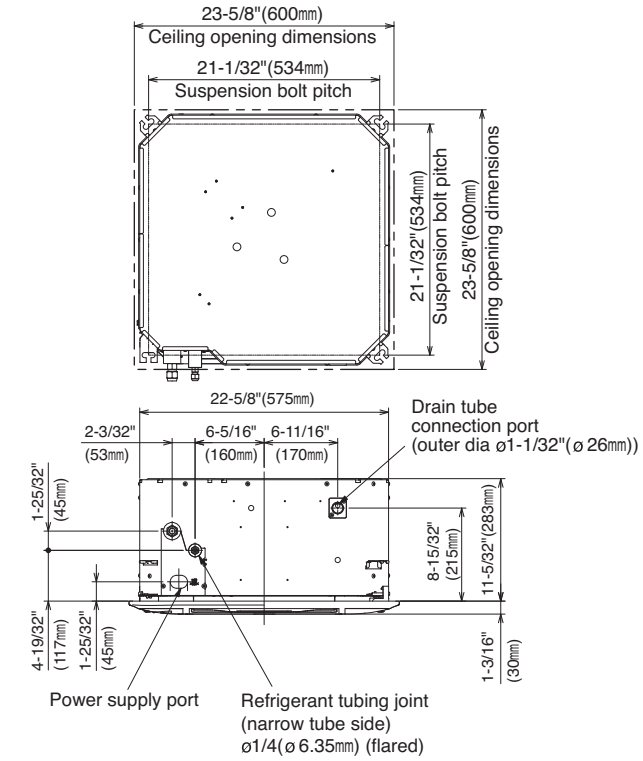


Fig. 6-2

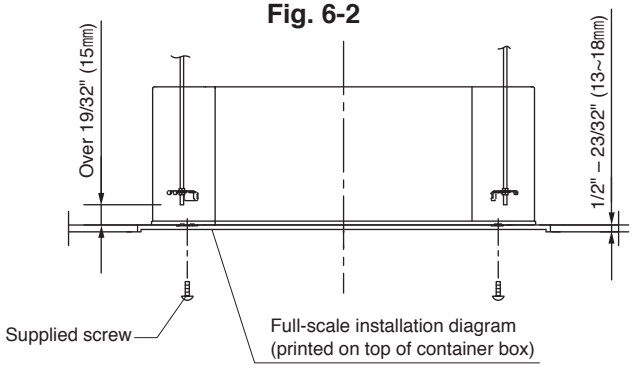


Fig. 6-3

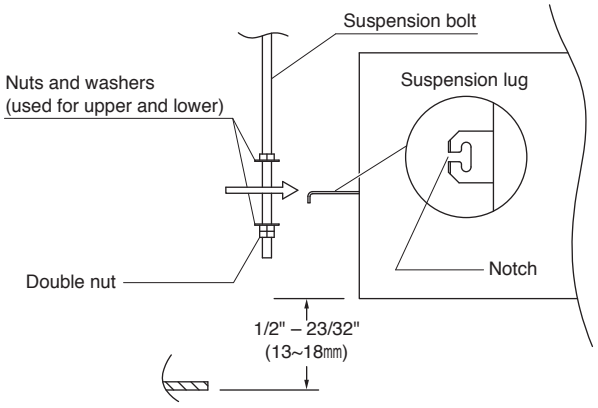


Fig. 6-4

3-4. Installing the Drain Piping

(1) Prepare standard hard PVC pipe (locally purchased O.D. 1-1/32" (26 mm)) for the drain and use the supplied hose band to prevent water leaks. (Fig. 6-5)

(2) To install the drain hose, first place 1 of the 2 hose bands over the unit drain port and the other hose band over the hard PVC pipe (not supplied). Then connect both ends of the supplied drain hose. (Fig. 6-5)

(3) On the unit drain side, grasp the hose band with pliers and insert the drain hose all the way to the base.

- If other commercially available hose bands are used, the drain hose may become pinched or wrinkled and there is danger of water leakage. Therefore be sure to use the supplied hose bands. When sliding the hose bands, be careful to avoid scratching the drain hose.
- Do not use adhesive when connecting the supplied drain hose to the drain port (either on the main unit or the PVC pipe).

  Reasons: a) It may cause water to leak from the connection. Since the connection is slippery just after the adhesive has been applied, the pipe easily slips off.

  b) The pipe cannot be removed when maintenance is needed.

(4) Wrap the hose with the supplied drain hose insulation and use the 4 twist ties so that the hose is insulated with no gaps.

- Do not bend the supplied drain hose 90° or more. The hose may slip off.

NOTE

Make sure the drain pipe has a downward gradient (1/100 or more) and that there are no water traps.

CAUTION

- **In cases where it is necessary to raise the height of the drain piping, the drain piping can be raised to a maximum height of 2.78 ft. (850 mm) above the bottom surface of the ceiling. Under no conditions attempt to raise it higher than 2.78 ft. (850 mm) above the bottom surface of the ceiling. Doing so will result in water leakage. (Fig. 6-7)**
- **Do not use natural drainage.**
- **Do not install the pipe with an upward gradient from the connection port. This will cause the drain water to flow backward and leak when the unit is not operating. (Fig. 6-8)**
- **Do not apply force to the piping on the unit side when connecting the drain pipe. The pipe should not be allowed to hang unsupported from its connection to the unit. Fasten the pipe to a wall, frame, or other support as close to the unit as possible. (Fig. 6-9)**
- **Provide insulation for any pipes that are run indoors.**

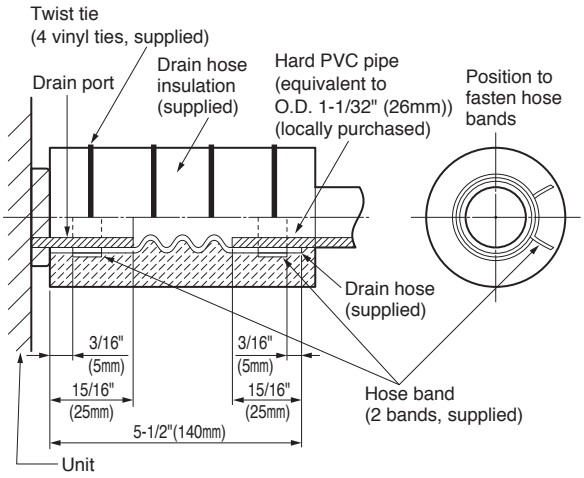


Fig. 6-5

CAUTION

- **Attach so that the hose band fastener is on the side of the drain port.**
- **Attach the hose bands so that each is approximately 3/16" (5 mm) to 15/16" (25 mm) from the end of the supplied drain hose.**

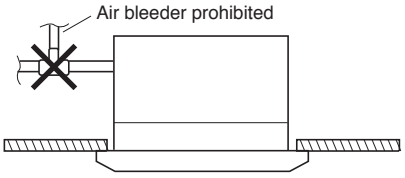


Fig. 6-6

CAUTION

- **Do not install an air bleeder as this may cause water to spray from the drain pipe outlet. (Fig. 6-6)**

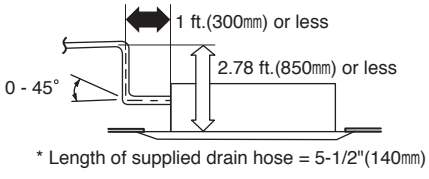


Fig. 6-7

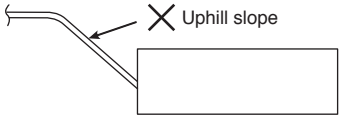


Fig. 6-8

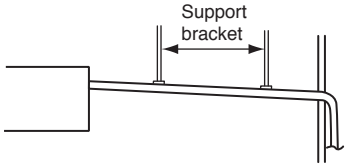


Fig. 6-9

3-5. Checking the Drainage

After wiring and drain piping are completed, use the following procedure to check that the water will drain smoothly. For this, prepare a bucket and wiping cloth to catch and wipe up spilled water.

- Be sure to do the wiring between the units before installing the ceiling panel. (Refer to 3-9. Wiring Instructions for Inter-unit Connections)

(1) Turn on the power. (Here, "power" refers to the power supply from the outdoor unit.)

(2) Slowly pour approx. 16 ounces (500 ml) of water into the drain pan to check drainage. (Fig. 6-10a)

(3) Remove the 2 screws from the control box cover, then open the cover. Be careful not to drop the cover at this time.

(4) Disconnect the FS 3P connector (red) on the control PCB and operate the drain pump. (Fig. 6-10b) Check the water flow through the transparent drain pipe and see if there is any leakage.

(5) When the check of drainage is complete, reconnect the FS 3P connector and remount the control cover.

CAUTION

The drain pump will continue to operate for a minimum of 6 minutes after the FS 3P connector is reconnected.

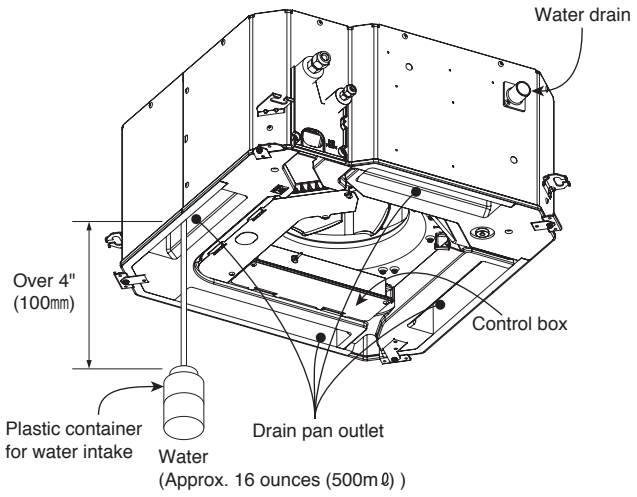


Fig. 6-10a

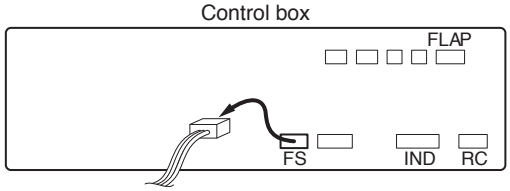


Fig. 6-10b

3-6. How to Install the Ceiling Panel

Checking the unit position

(1) Check that the ceiling hole is 23-5/8" (600 mm) × 23-5/8" (600 mm) (Fig. 6-11)

(2) Confirm that the position of the indoor unit and the ceiling as shown in the diagram. If the positions of the ceiling surface and unit do not match, air leakage, water leakage, flap operation failure, or other problems may occur. (Fig. 6-11)

Ⓐ must be within the range of 1/2"(13㎜) to 23/32"(18㎜). (Fig. 6-11)
If not within this range, malfunction or other trouble may occur.

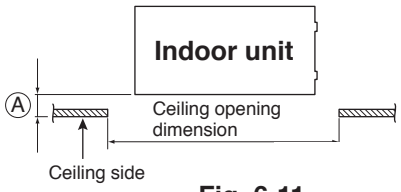


Fig. 6-11

CAUTION

- **Never place the panel face-down. Neither hang it vertically nor place it on top of a projecting object. Placing it face-down will damage the surface.**
- **Do not touch the flap or apply force to it. (This may cause flap malfunction.) (Fig. 6-12)**

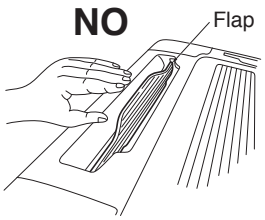


Fig. 6-12

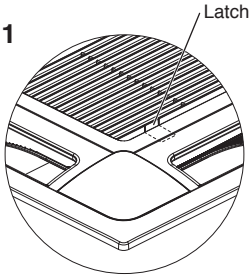


Fig. 6-13

3-6-1. Before Installing the Ceiling Panel

(1) Remove the air-intake grille and air filter from the ceiling panel.

a) Press on and slide the two latches of the air-intake grille with your thumb in the direction shown by the arrow ① to open the grille. (Figs. 6-13 and 6-14)

b) With the air-intake grille opened, remove the grille hinge from the ceiling panel by sliding it in the direction shown by the arrow ② . (Fig. 6-15)

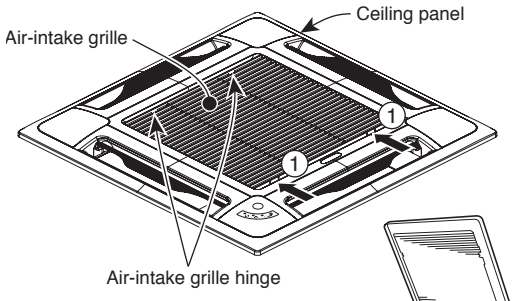


Fig. 6-14

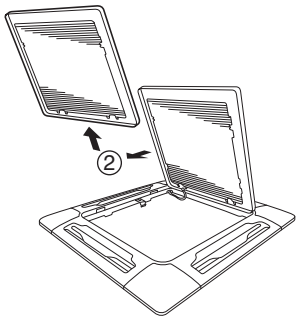
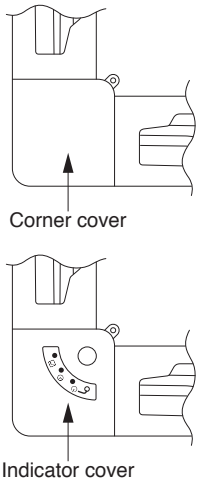


Fig. 6-15

(2) Removing the corner cover and indicator cover

a) While lightly pressing the center of the corner cover, pull up the tab for the screw hole. Use the same procedure to remove the indicator cover. (Fig. 6-16)



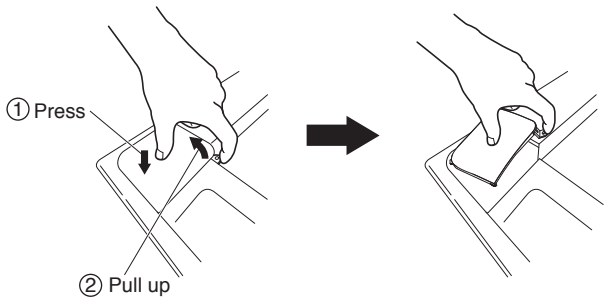


Fig. 6-16

3-6-2. Installing the Ceiling Panel

(1) Hang the temporary latches on the inside of the ceiling panel to the receptacle on the unit to temporarily attach the ceiling panel in place. (Fig. 6-17)

- The ceiling panel must be installed in the correct direction relative to the unit. Align the REF. PIPE and DRAIN marks on the ceiling panel corner with the correct positions on the unit.

(2) Align the panel installation holes and the unit screw holes. (Fig. 6-18)

(3) Tighten the supplied special screws at the 4 panel installation locations so that the panel is attached tightly to the unit.

- Check that the wiring connectors are not caught between the unit and the ceiling panel.

(4) Check that the panel is attached tightly to the ceiling. (Fig. 6-19)

- At this time, make sure that there are no gaps between the unit and the ceiling panel, or between the ceiling panel and the ceiling surface.
- If there is a gap between the panel and the ceiling, leave the ceiling panel attached and make fine adjustments to the installation height of the unit to eliminate the gap with the ceiling.

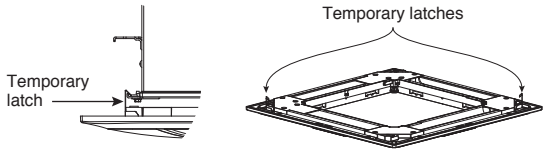


Fig. 6-17

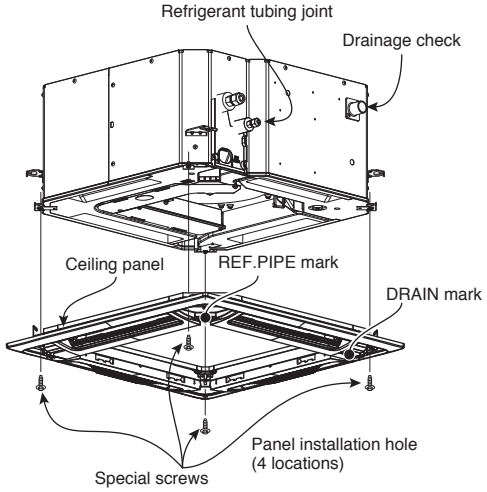


Fig. 6-18

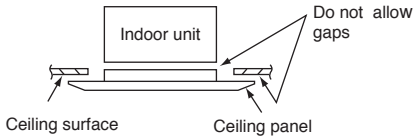
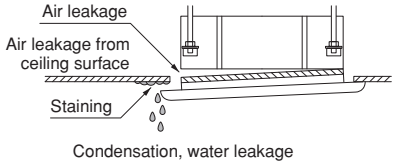


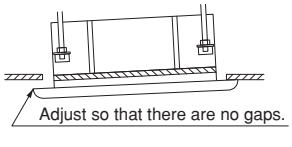
Fig. 6-19

CAUTION

- If the screws are not sufficiently tightened, trouble such as that shown in the figure below may occur. Be sure to tighten the screws securely.



- If a gap remains between the ceiling surface and the ceiling panel even after the screws are tightened, adjust the height of the unit again.



The height of the unit can be adjusted from the ceiling panel corner hole, with the ceiling panel attached, to an extent that does not affect the unit levelness, the drain hose, or other elements.

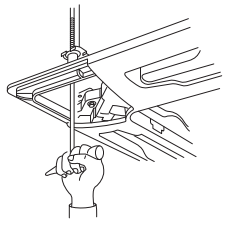


Fig. 6-20

3-6-3. Wiring the Ceiling Panel and the Indicator

(1) Remove the 2 screws from the control box cover, then open the cover. Be careful that the cover does not fall.

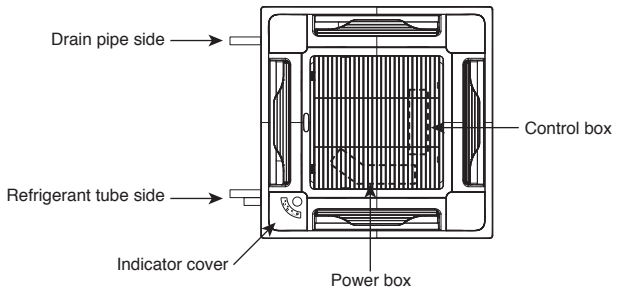
(2) Connect the 5P FLAP wiring connector from the ceiling panel to the connector on the control PCB in the control box. (Fig. 6-21)

(3) Connect the 7P IND and 4P RC wiring connector from the indicator to the connectors on the control PCB in the control box. (Fig. 6-21)

(4) Be sure to use the clamps to fasten the connector wires in place. (Fig. 6-21)

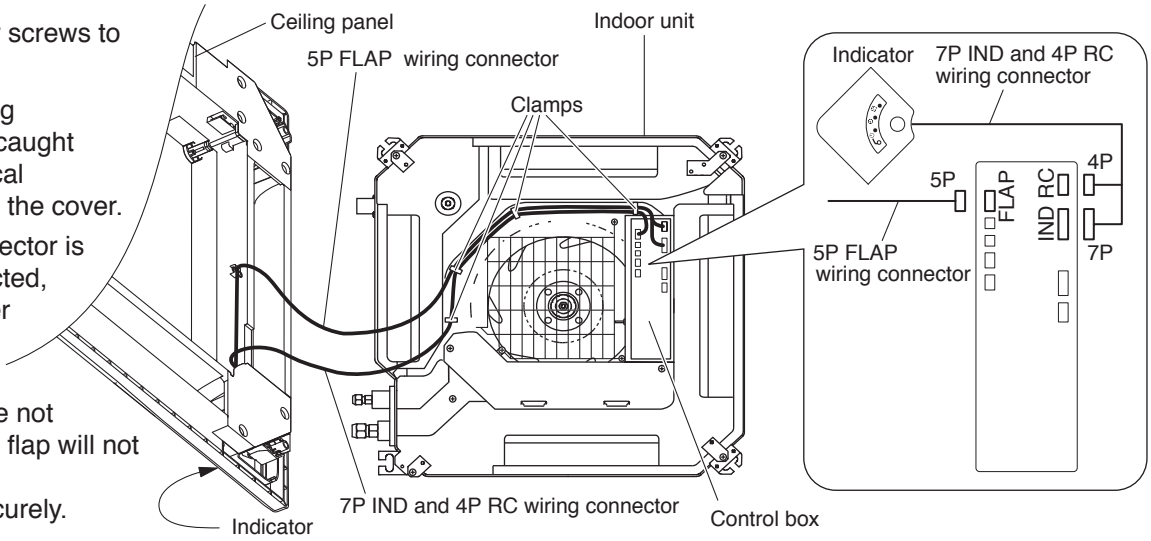
(5) Tighten the 2 cover screws to close the cover.

- Check that the wiring connectors are not caught between the electrical component box and the cover.
- If the indicator connector is not securely connected, the remote controller signal will not be received.
- If the connectors are not connected, the auto flap will not operate. Be sure to connect them securely.



As to how to attach the indicator cover, refer to Fig.6-23.

Fig. 6-22



* Pass the wiring connectors through the clamps to fasten them in place, as shown in the figure.

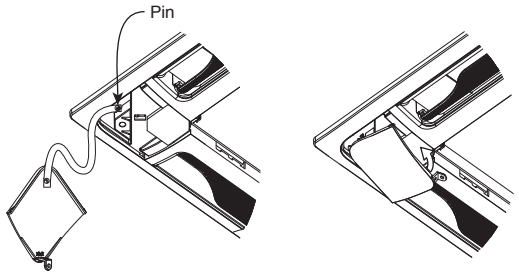
Fig. 6-21

3-6-4. How to Attach the Corner Cover and Air-Intake Grille

A. Attaching the corner cover

(1) Check that the safety strap from the corner cover is fastened to the ceiling panel pin, as shown in the figure. (Fig. 6-23)

(2) Use the supplied screws to attach the corner cover to the ceiling panel.



Place the corner cover so that the 3 tabs fit into the holes in the ceiling panel. Then fasten it in place with the supplied screws.

Fig. 6-23

B. Attaching the air-intake grille

- To install the air-intake grille, follow the steps for 3-6-1. **Before Installing the Ceiling Panel** in the reverse order. By rotating the air-intake grille, it is possible to attach the grille onto the ceiling panel from any of 4 directions. (Fig. 6-25)
- **When attaching the air-intake grille, be careful that the flap and the indicator wiring do not become caught.**
- **Be sure to attach the safety cord that prevents the air-intake grille from dropping off to the ceiling panel unit as shown in Fig. 6-24.**

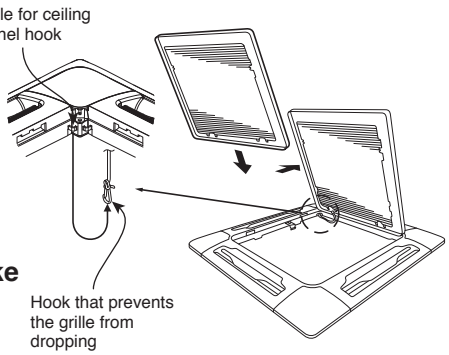
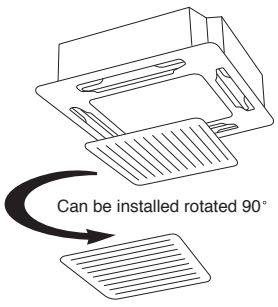


Fig. 6-24



* The grille can be installed with these hinges facing in any of 4 directions.

Fig. 6-25

3-6-5. Checking After Installation

- Check that there are no gaps between the unit and the ceiling panel, or between the ceiling panel and the ceiling surface. Gaps may cause water leakage and condensation.
- Check that the wiring is securely connected.
  If it is not securely connected, the auto flap will not operate. In addition, water leakage and condensation may occur.

3-6-6. When Removing the Ceiling Panel for Servicing

When removing the ceiling panel for servicing, remove the air-intake grille and air filter, disconnect the flap and the indicator wiring connectors inside the control box, and then remove the 4 mounting screws.

3-6-7. Adjusting the Auto Flap

The air-direction flap on the ceiling panel outlet can be adjusted as follows.

- Adjust the flap to the desired angle using the remote controller. The flap also has an automatic air-sweeping mechanism.

NOTE

- Never attempt to move the flap by hand.
- Proper air flow depends on the location of the air conditioner, the layout of the room and furniture, etc. If cooling or heating seems inadequate, try changing the direction of the air flow.

3-7. Wiring Instructions

General precautions on wiring

(1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.

(2) Provide a power outlet to be used exclusively for each unit, with a power supply disconnect and circuit breaker for overcurrent protection provided in the exclusive line.

(3) To prevent possible hazards due to insulation failure, the unit must be grounded.

(4) Each wiring connection must be done tightly and in accordance with the wiring system diagram. Wrong wiring may cause the unit to misoperate or become damaged.

(5) Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.

(6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or misoperation that occurs as a result of such unauthorized changes.

3-8. Recommended Wire Length and Diameter

Regulations on wiring diameter differ from locality to locality. For field wiring requirements, please refer to your local electrical codes. Carefully observe these regulations when carrying out the installation.
Table 4 lists recommended wire lengths and diameters for power supply systems.

NOTE

Refer to the wiring system diagram (Fig. 7a or Fig. 7b) for the meaning of (A), (B) and (C) in Table 4.

Refer to your local codes or in the absence of local codes see the National Electric Code: ANSI/NFPA70.

Table 4

Cross-Sectional Area (AWG) / Model	(A)+(B) (A) Power Supply Wiring Length (ft) (B) Power Line Length (ft)		(C) Control Line Length (ft)	Fuse or Circuit Breaker Capacity
	(#14)	(#12)	(#14)	
CU-KS12NK1A	131 (Max.)	230 (Max.)	65 (Max.)	20A
CU-KS18NKU, CU-KS18NKUA	131 (Max.)	230 (Max.)	100 (Max.)	15A

... AWG (American Wire Gauge)

WARNING

- **Be sure to comply with local codes on running the wire from the indoor unit to the outdoor unit (size of wire and wiring method, etc.).**
- **Each wire must be firmly connected.**
- **No wire should be allowed to touch refrigerant tubing, the compressor, or any moving part.**

WARNING

- **To avoid the risk of electric shock, each air conditioner unit must be grounded.**
- **For the installation of a grounding device, please observe local electrical codes.**
- **Grounding is necessary, especially for units using inverter circuits, in order to release charged electricity and electrical noise caused by high tension.**
  Otherwise, electrical shock may occur.
- **Place a dedicated ground more than 7' (2 m) away from other grounds and do not have it shared with other electric appliances.**

CAUTION

- **Be sure to connect the power supply line to the outdoor unit as shown in the wiring diagram. The indoor unit draws its power from the outdoor unit.**
- **Do not run wiring for antenna, signal, or power lines of television, radio, stereo, telephone, security system, or intercom any closer than 3'3" (1 m) from the power cable and wires between the indoor and outdoor units. Electrical noise may affect the operation.**

WIRING SYSTEM DIAGRAM

(CU-KS12NK1A)

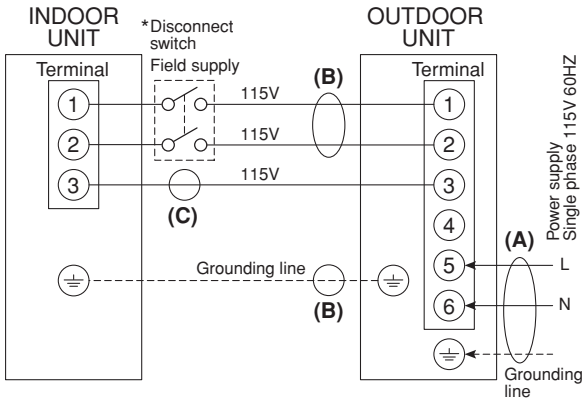


Fig. 7a

(CU-KS18NKU, CU-KS18NKUA)

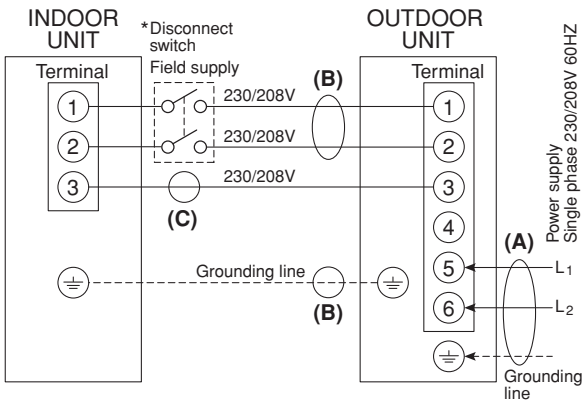


Fig. 7b

* **NOTE**

A disconnect switch may be required by national or local codes.

CAUTION

Always comply with national and local code requirements.

3-9. Wiring Instructions for Inter-unit Connections

(1) Remove the 1 screw from the terminal cover, then open the cover. Be careful that the cover does not fall.

(2) Remove the 3 screws from the power box cover, then open the cover. Be careful that the cover does not fall.

(3) Use the screw to securely fasten the ground wire from the outdoor unit in place.

(4) Remove the transparent plastic cover from the 3P terminal plate.

(5) While viewing the wiring diagram, connect the inter-unit and power supply line to terminals 1, 2 and 3 on the 3P terminal plate.

(6) Remount the transparent plastic cover onto the 3P terminal plate.

(7) Be sure to use the clamping strap to fasten the wires in place.

(8) Tighten the screws to remount the terminal and the power box cover.

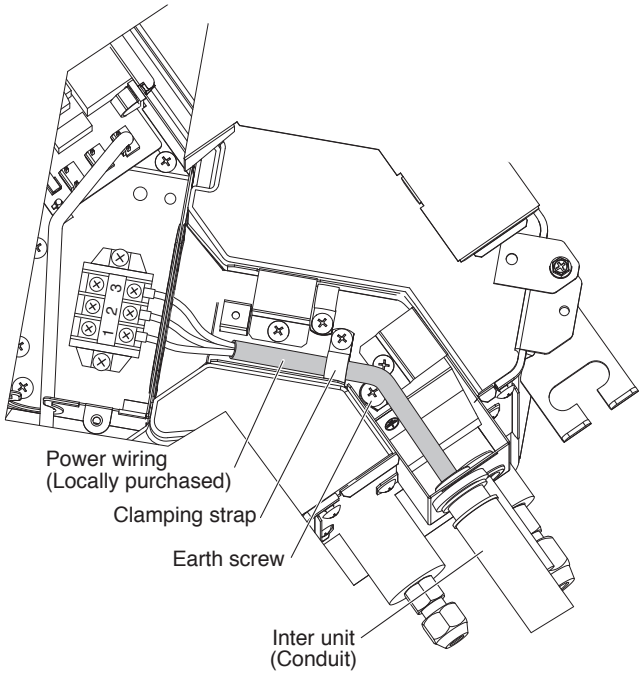


Fig. 8

WARNING **Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.**

When connecting each power wire to the corresponding terminal, follow the instructions “How to connect wiring to the terminal” and fasten the wire securely tight with the fixing screw of the terminal plate.

How to connect wiring to the terminal

a) For Indoor Unit

(1) Cut the wire end with a cutting pliers, then strip the insulation to expose the wire about 9/32" (7 mm). See the label (Fig. 9) near the terminal plate.

(2) Using a screwdriver, loosen the terminal screw on the terminal plate.

(3) Insert the wire and tighten the terminal screw completely using a screwdriver.

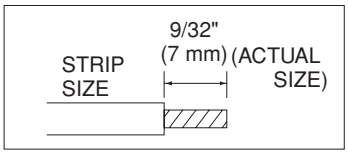


Fig. 9

b) For Outdoor Unit

■ For solid core wiring (or F-cable)

(1) Cut the wire end with a cutting pliers, then strip the insulation to expose the solid wire about 15/16" (25 mm). (Fig. 10)

(2) Using a screwdriver, remove the terminal screw(s) on the terminal plate.

(3) Using the pliers, bend the solid wire to form a loop suitable for the terminal screw.

(4) Shape the loop wire properly, place it on the terminal plate and fix it securely with the removed terminal screw using a screwdriver.

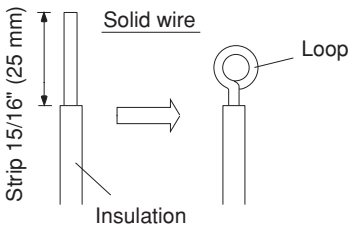


Fig. 10

■ **For stranded wiring**

(1) Cut the wire end with a cutting pliers, then strip the insulation to expose the stranded wiring about 3/8" (10 mm) and tightly twist the wire ends. (Figs. 11 and 12)

(2) Using a screwdriver, remove the terminal screw(s) on the terminal plate.

(3) Using a ring connector fastener or pliers, securely clamp each stripped wire end with a ring connector. (Fig. 11)

(4) Place the ring connector wire, and replace and tighten the removed terminal screw using a screwdriver. (Fig. 13)

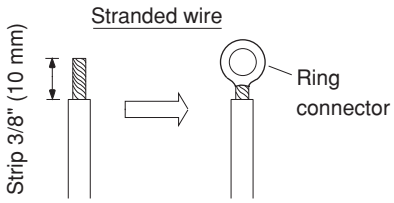


Fig. 11

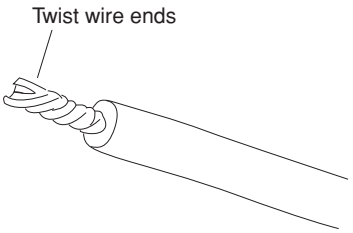


Fig. 12

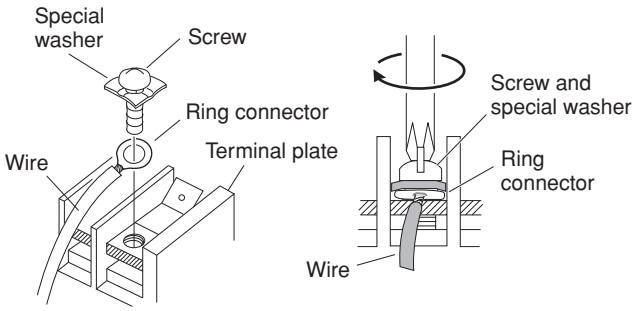


Fig. 13

4. How to Install the Outdoor Unit

First refer to Section 2. Installation Site Selection.

4-1. Wiring Instructions for the Outdoor Unit

Regulations on wire size differ from locality to locality. For field wiring requirements, please refer to your local electrical codes. Make sure that the installation fully complies with all local and national regulations.

(1) Remove access panel “C”. (Fig. 14)

(2) Connect the inter-unit and power supply line according to the drawing on the panel side.

(3) Be sure to size each wire allowing approx. 4" (10 cm) longer than the required length for wiring. Store excess wiring inside the cabinet.

(4) When connections are completed, check that all connections are correct as shown in the wiring system diagram on panel side.

(5) Be sure to ground the unit according to your local codes.

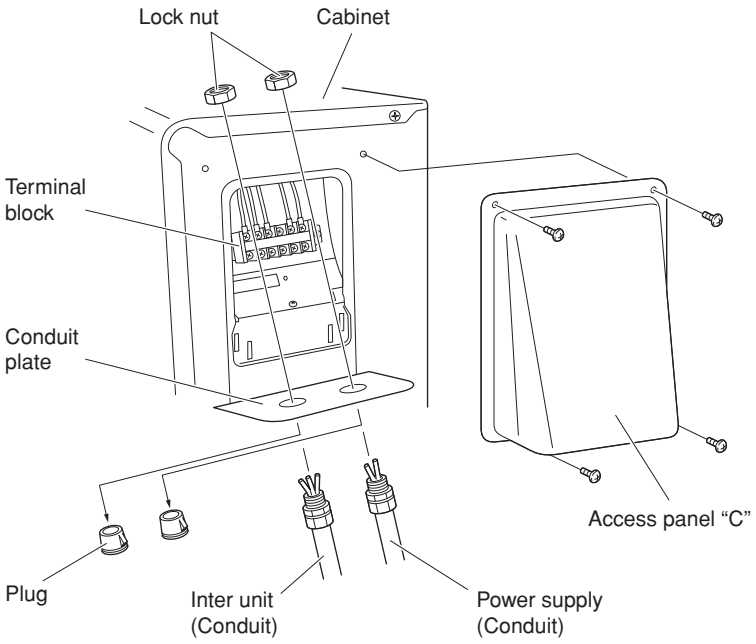


Fig. 14

5. Refrigerant Tubing

5-1. Use of the Flaring Method

Many of the conventional split system air conditioners employ the flaring method to connect refrigerant tubes which run between indoor and outdoor units. In this method, the copper tubes are flared at each end and connected with flare nuts.

5-2. Flaring Procedure with a Flare Tool

(1) Cut the copper tube to the required length with a tube cutter. It is recommended to cut approx. 12" to 20" (30 to 50 cm) longer than the tubing length you estimate.

(2) Remove burrs at the end of the copper tube with a tube reamer or file. This process is important and should be done carefully to make a good flare. (Fig. 15)

NOTE

When reaming, hold the tube end downward and be sure that no copper scraps fall into the tube. (Fig. 16)

(3) Remove the flare nut from the unit and be sure to mount it on the copper tube.

(4) Make a flare at the end of copper tube with a flare tool.* (Figs. 17 and 18)

(*Use “RIDGID” or equivalent.)

NOTE

A good flare should have the following characteristics:

- inside surface is glossy and smooth.
- edge is smooth.
- tapered sides are of uniform length.

5-3. Caution before Connecting Tubes Tightly

a) Be sure to apply a sealing cap or water-proof tape to prevent dust or water from getting into the tubes before they are used.

b) Be sure to apply refrigerant lubricant to the matching surfaces of the flare and union before connecting them together. This is effective for reducing gas leaks. (Fig. 19)

c) For proper connection, align the union tube and flare tube straight with each other, then screw in the flare nut lightly at first to obtain a smooth match. (Fig. 20)

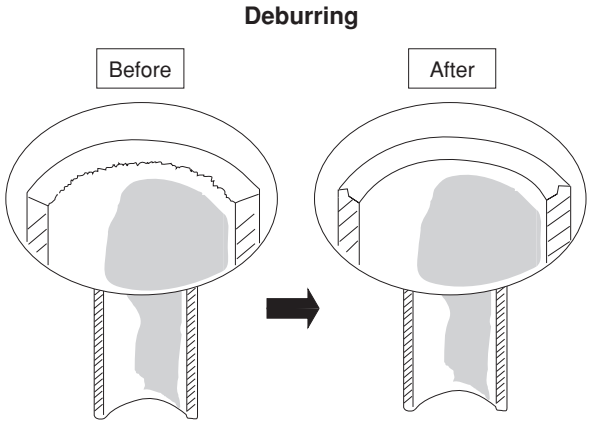


Fig. 15

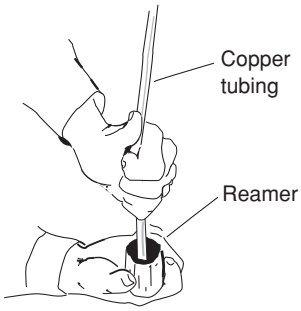


Fig. 16

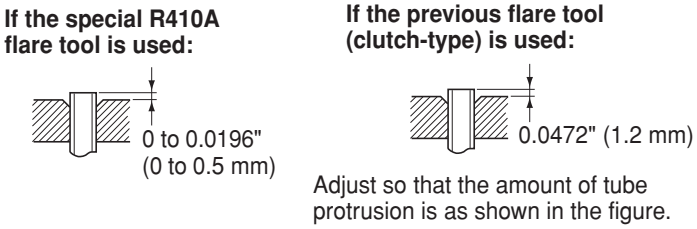

If the special R410A flare tool is used:
0 to 0.0196"
(0 to 0.5 mm)
If the previous flare tool (clutch-type) is used:
0.0472" (1.2 mm)
Adjust so that the amount of tube protrusion is as shown in the figure.

Fig. 17

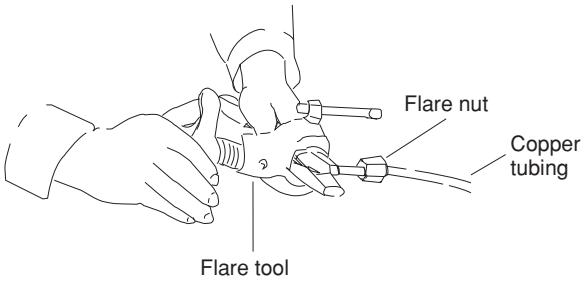


Fig. 18

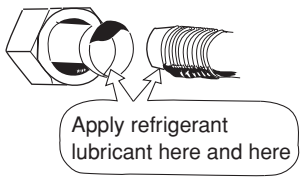


Fig. 19

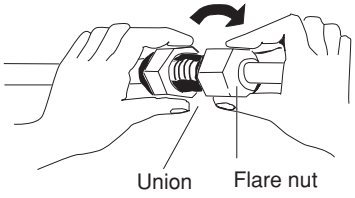


Fig. 20

5-4. Connecting Tubing between Indoor and Outdoor Units

a) Tightly connect the indoor side refrigerant tubing extended from the wall with the outdoor side tubing. (Fig. 21)

b) To fasten the flare nuts, apply specified torque as:

Table 5

Tube Dia.	Nut	Tightening Torque
1/4" (6.35 mm)	21/32" (17 mm)	Approx. 120 – 160 lbs·in (140 – 180 kgf·cm)
3/8" (9.52 mm)	7/8" (22 mm)	Approx. 300 – 360 lbs·in (340 – 420 kgf·cm)
1/2" (12.70 mm)	1-1/32" (26 mm)	Approx. 430 – 480 lbs·in (490 – 550 kgf·cm)
5/8" (15.88 mm)	1-5/32" (29 mm)	Approx. 590 – 710 lbs·in (680 – 820 kgf·cm)

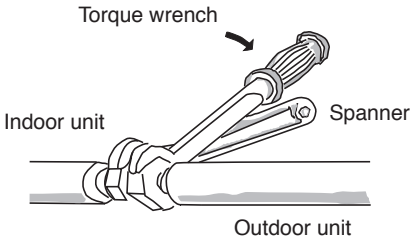


Fig. 21

5-5. Insulation of Refrigerant Tubing

IMPORTANT

To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated with a proper insulation material.**
The thickness of the insulation should be a minimum 5/16" (8 mm). (Fig. 22)

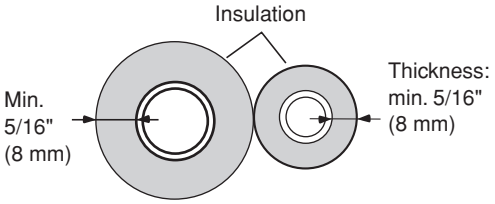


Fig. 22

Taping the flare nuts

Wind the insulation tape around the flare nuts at the tube connections. Secondly cover up the tubing connections with the flare insulation (1/8" (T3, supplied)). Then wind the other flare insulation (3/16" (T5, supplied)). Finally, fasten the insulation at both ends with the supplied vinyl ties. (Fig. 23)

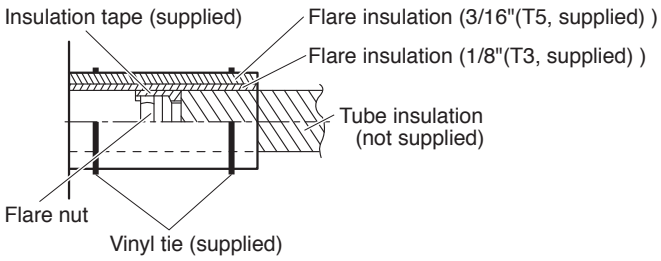


Fig. 23

Insulation material

The material used for insulation must have good insulation characteristics, be easy to use, be age resistant, and must not easily absorb moisture.

CAUTION

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

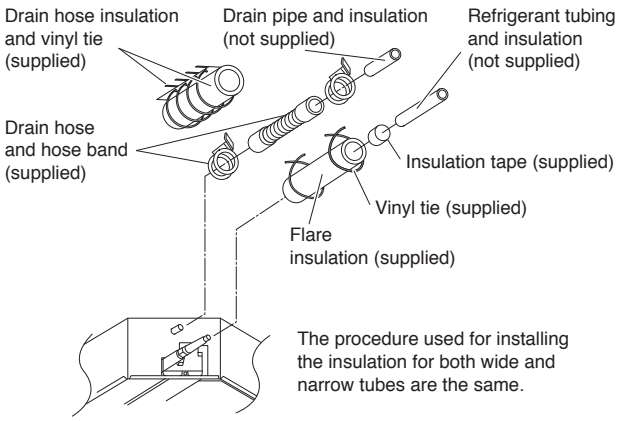


Fig. 24

Never grasp the drain or refrigerant connecting outlets when moving the unit.

5-6. Taping the Tubes

(1) At this time, the 2 refrigerant tubes (and electrical wire if local codes permit) should be taped together with armoring tape. The drain hose may also be included and taped together as 1 bundle with the tubing.

(2) Wrap the armoring tape from the bottom of the outdoor unit to the top of the tubing where it enters the wall. As you wrap the tubing, overlap half of each previous tape turn. (Fig. 25)

(3) Clamp the tubing bundle to wall, using 1 clamp approx. every 47" (120 cm).

NOTE

Do not wind the armoring tape too tightly, since this will decrease the heat insulation effect. Also, be sure the condensation drain hose splits away from the bundle and drips clear of the unit and the tubing.

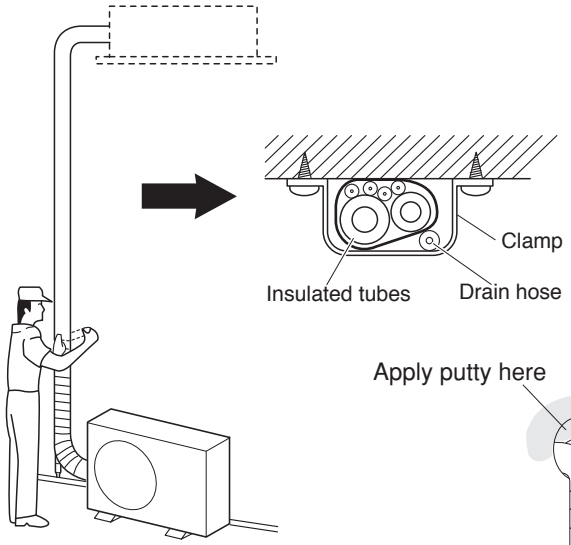


Fig. 25

5-7. Finishing the Installation

After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering. (Fig. 26)

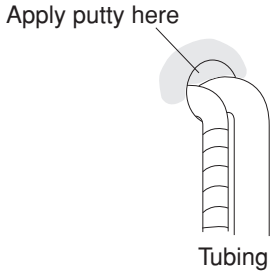


Fig. 26

6. Air Purging

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below. Therefore, they must be purged completely.

- pressure in the system rises
- operating current rises
- cooling (or heating) efficiency drops
- moisture in the air may freeze and block capillary tubing
- water may lead to corrosion of parts in the refrigerant system

■ Air Purging with a Vacuum Pump (for Test Run)

(1) Check that each tube (both narrow and wide tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Note that both narrow and wide tube service valves on the outdoor unit are kept closed at this stage.

(2) Using an adjustable wrench or box wrench, remove the valve caps from the service valve on both narrow and wide tubes.

(3) Connect a vacuum pump and a manifold valve (with pressure gauges) to the service port on the wide tube service valve. (Fig. 27)

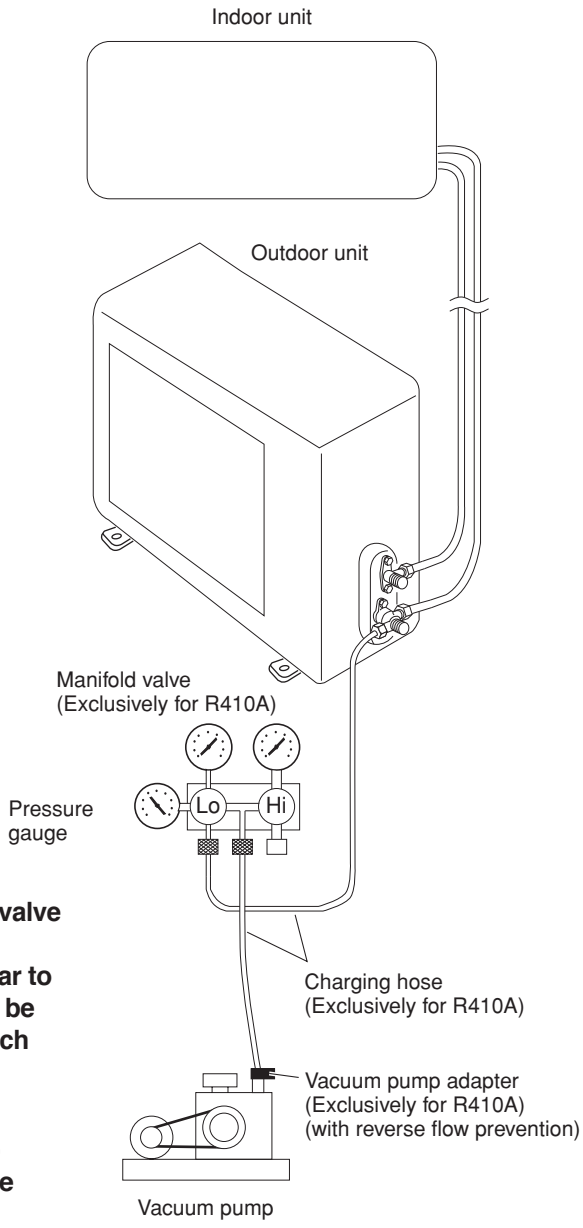


Fig. 27

CAUTION

The service port on the wide tube service valve uses a Schrader core valve to access the refrigerant system. The valve core is similar to those used in automobile tires. Therefore, be sure to use a vacuum hose connector which has a push-pin inside.

CAUTION

Be sure to use a manifold valve for air purging. If it is not available, use a stop valve (field supply) for this purpose. The "Hi" knob of the manifold valve must always be kept closed.

(4) With the “Lo” knob of the manifold valve open, run the vacuum pump. The operation time for the vacuum pump varies with tubing length and the capacity of the pump. The following table shows the amount of time for evacuation:

Table 6

Required time for evacuation when 26.4 gal/h (100 liter/h) vacuum pump is used	
If tubing length is less than 33 ft. (10 m)	If tubing length is more than 33 ft. (10 m)
10 min. or more	**15 min. or more**

(5) With the vacuum pump still running, close the “Lo” knob of the manifold valve. Then stop the vacuum pump.

(6) With the hex wrench, turn the valve stem on the narrow tube service valve counter-clockwise by 90 degrees (1/4 turn) for 10 seconds, and then turn the stem clockwise to close it again. (Fig. 28)

CAUTION **Be sure to completely insert the hex wrench before attempting to turn the valve.**

(7) Leak test all joints at the tubing (both indoor and outdoors) with soapy water. Bubbles indicate a leak. Tighten the joint more when leaks, then check if there is no leak. Be sure to wipe off the soap with a clean cloth.

(8) With the hex wrench, turn the wide tube service valve stem counter-clockwise to fully open the valve.

(9) Turn the narrow tube service valve stem counter-clockwise to fully open the valve.

(10) Loosen the vacuum hose connected to the wide tube service port slightly to release the pressure. Then, remove the hose.

CAUTION **This may cause the refrigerant gas to leak. In order to avoid this, take off the hose quickly.**

(11) Fasten the valve cap on the wide tube service port securely with an adjustable wrench or box wrench. Next, mount the valve cap on the service valve and tighten it to 170 lbs·in (200 kgf·cm) with a torque wrench. This process is very important to prevent gas from leaking from the system.

(12) Test run the air conditioner. (See next page.)

(13) While the air conditioner is running, apply liquid soap to check for any gas leaks around the service valves or caps.

(14) If there is no leakage, stop the air conditioner.

(15) Wipe off the soap on the tubing.

This completes air purging with a vacuum pump and the air conditioner is ready for actual operation.

NOTE

To prevent other refrigerants from being mistakenly charged to units which use R410A, the size of the charge port on the service valve is different from the one for other refrigerant types. For servicing such as recharging, the specified charging hose, manifold and vacuum pump adapter (with reverse flow prevention) for R410A must be used.

NOTE

The required time in Table 6 is calculated based on the assumption that the ideal (or target) vacuum condition is around 0.193 psi (10 mmHg abs.).

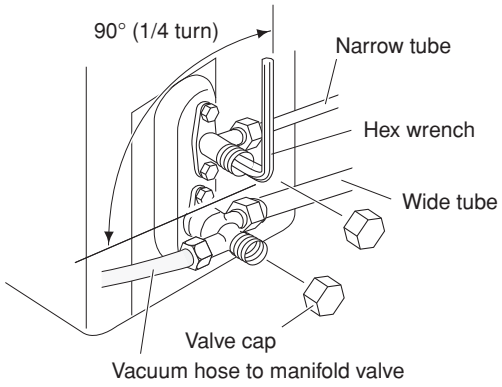


Fig. 28

How to Test Run the Air Conditioner

After turning on the power of the air conditioner, use the remote controller and follow the steps below to conduct the test run.

(1) Set the remote controller in Test Run mode. (Fig. 29)

a) Press and hold the HIGH POWER button and the 1HR. TIMER button.

b) Then press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first.

c) Then release the HIGH POWER and 1HR. TIMER buttons.

d) ❄ appears and “oP-1” blinking in the remote controller clock display area. (Fig. 30)

(2) Start Cooling mode test run by pressing the ON/OFF operation button of the remote controller. (Fig. 29)

- This starts the fan producing uncooled forced air with the 3 indicator lamps (OPERATION lamp, TIMER lamp, and HIGH POWER lamp) on the main unit blinking. (Fig. 31)
- After 3 minutes, the system shifts into cooling operation, and cool air will start to be felt. Cooling mode test run is unaffected by the room temperature.

(3) Press the ON/OFF operation button of the remote controller again to stop the test run. (Fig. 29)

(4) Finally press the ACL (Reset) button of the remote controller to release it from Test Run mode to return to normal mode. (Fig. 29)

- “❄” and “oP-1” will disappear from the remote controller clock display area.

NOTE

Troubleshooting:
In the event that the green OPERATION lamp is blinking upon powering up the system, an error condition exists. In this case, refer to the self-diagnostics procedure which can be seen by opening the air-intake grille.

IMPORTANT

After the test run is completed, be sure to press the ACL (Reset) button to return to normal mode. The air conditioner will not operate correctly if this is not done.

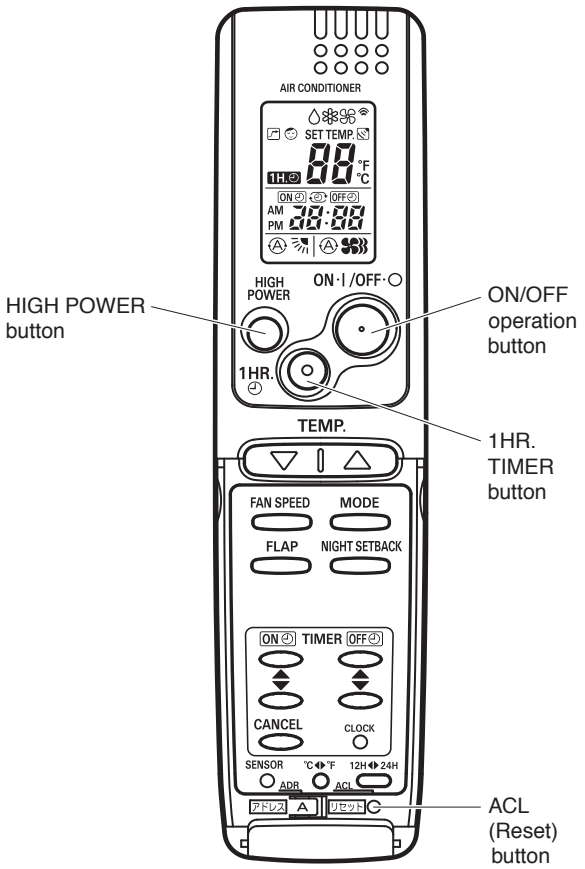


Fig. 29

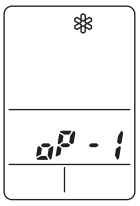


Fig. 30

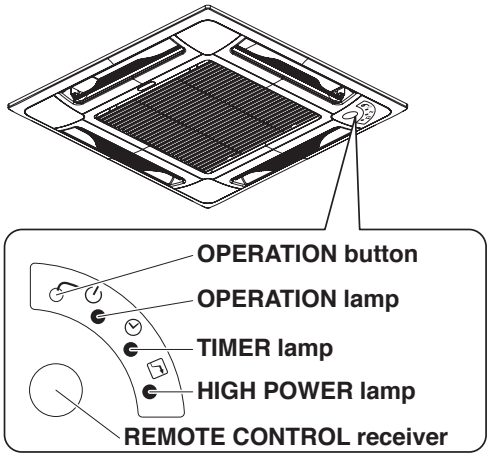
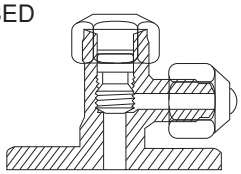
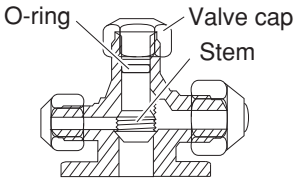
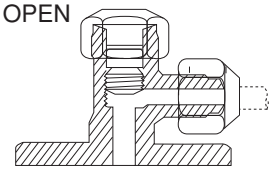
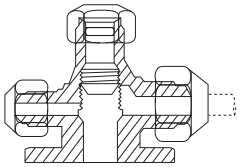
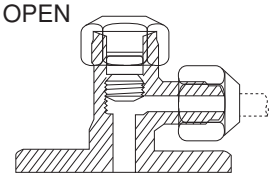
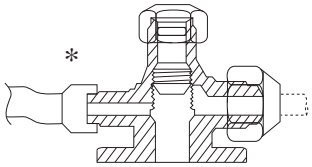
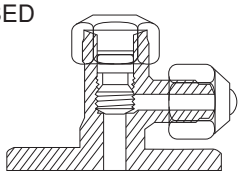
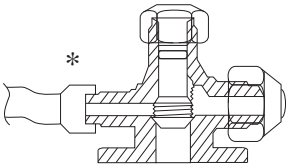


Fig. 31

■ Basic Functions of the Service Valves

The basic functions of the service valves are given in Table 7 below.

Table 7

Action	Narrow Tube Service Valve (2-Way)	Wide Tube Service Valve (3-Way)
Shipping	CLOSED 	
Operating and test running the air conditioner	Fully OPEN 	
Measuring pressure and gas charging	Fully OPEN 	
Air purging with a vacuum pump	CLOSED 	

* The service port on the wide tube service valve uses a Schrader core valve to access the refrigerant system. Therefore, be sure to use a hose connector which has a push-pin inside. (Fig. 32)

CAUTION

When opening or closing the service valve stem, use the hex wrench. Be sure to fully seat the wrench before turning the valve.

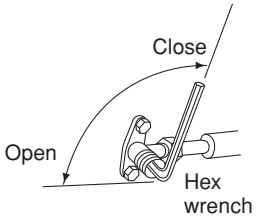
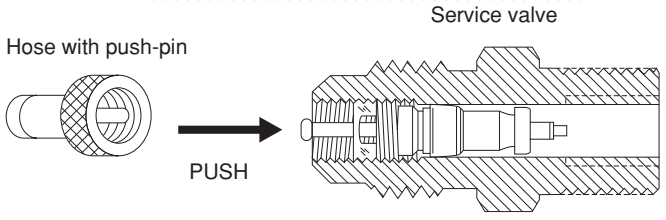


Fig. 33



NOTE

External diameter of service port
R410A: 5/16"

Fig. 32

■ Pump Down

Pump down means collecting all refrigerant gas in the system back into the outdoor unit without losing any of the gas. Pump down is used when the unit is to be moved or before servicing the refrigerant circuit.

Pump Down Procedure

Be sure to carry out pump down with the unit in Cooling mode.

(1) Connect the Lo side charging hose of the manifold valve to the service port on the wide tube service valve.

(2) Using a hex wrench, turn the narrow tube service valve clockwise all the way to close the service valve. (Be sure to confirm that the wide tube service valve is fully open.)

(3) Press the operation button and start cooling operation.

(4) When the low pressure gauge reading falls to 14.2 to 7.1 psi (1 to 0.5 kg/cm^2), fully close the wide tube valve stem. Then quickly stop the unit.

(5) Disconnect all gauges and hoses, and replace the valve caps as they were before.

■ Service Valve Connections

a) Temporary connection:
Screw in 3 – 5 turns by hand. (Fig. 34)

b) To fasten the flare nuts, apply specified torque as Table 8 and Fig. 35.

Table 8

Tube Dia.	Nut	Tightening Torque
1/4" (6.35 mm)	21/32" (17 mm)	Approx. 120 – 160 lbs·in (140 – 180 kgf·cm)
3/8" (9.52 mm)	7/8" (22 mm)	Approx. 300 – 360 lbs·in (340 – 420 kgf·cm)
1/2" (12.70 mm)	1-1/32" (26 mm)	Approx. 430 – 480 lbs·in (490 – 550 kgf·cm)
5/8" (15.88 mm)	1-5/32" (29 mm)	Approx. 590 – 710 lbs·in (680 – 820 kgf·cm)

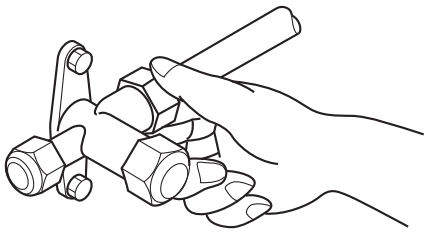


Fig. 34

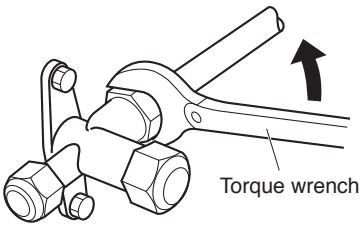


Fig. 35

CAUTION

Be sure to tighten the flare nut using the prescribed torque. If the nut is over-tightened, refrigerant leakage may occur.

7. Remote Controller Installation Position

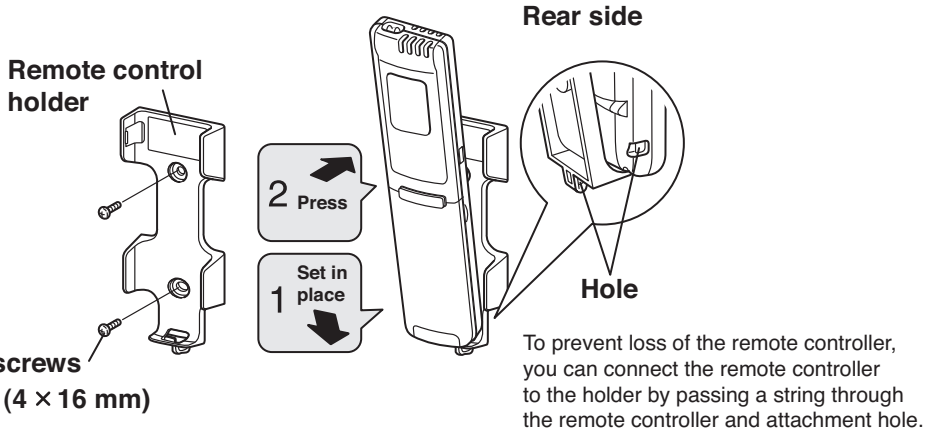
The remote controller can be operated from either a non-fixed position or a wall-mounted position.

To ensure that the air conditioner operates correctly, do not install the remote controller in the following places:

- In direct sunlight
- Behind a curtain or other place where it is covered
- More than 26' (8 m) away from the air conditioner
- In the path of the air conditioner's airstream
- Where it may become extremely hot or cold
- Where it may be subject to electrical or magnetic interference
- Where there is an obstacle between the remote controller and the air conditioner (since a check signal is sent from the remote controller every 5 minutes)

7-1. Mounting on a Wall

Before mounting the remote controller, press the ON/OFF operation button at the mounting location to make sure that the air conditioner operates from that location. The indoor unit should make a beeping sound to indicate that it has received the signal.



To prevent loss of the remote controller, you can connect the remote controller to the holder by passing a string through the remote controller and attachment hole.

To take out the remote controller, pull it forward.

Fig. 36

8. Address Switch

8-1. Address Setting of the Remote Controller

The address can be set in order to prevent interference between remote controllers when 2 indoor units are installed near each other. The address is normally set to “A.” To set a different address, it is necessary to change the address on the second remote controller.

NOTE

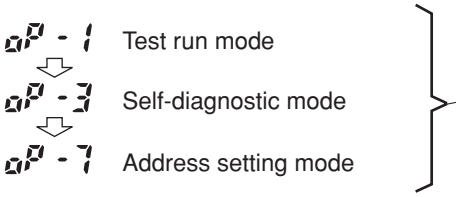
Once changed, you cannot restore the original address setting of the air conditioner.

(1) Switch on the power source.

(2) Break the address-setting tab marked “A” on the second remote controller to change the address (Fig. 37). When the tab is removed, the address is automatically set to B (Fig. 38).

(3) Press and hold the remote controller HIGH POWER button and 1HR. TIMER button. Then, press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first, then release the HIGH POWER and 1HR. TIMER buttons. “oP-1” (Test Run) appears, blinking in the remote controller clock display area.

(4) Each time the 1HR. TIMER button is pressed, the display changes as shown below. Press this button 2 times to change the display to “oP-7” (Address setting). (Fig. 39)



(5) “oP-7” has now been selected for address setting.

(6) Press the ON/OFF operation button on the remote controller. (Fig. 39) Check that the “beep” signal-received sound is heard from the second indoor unit (approximately 5 times). The sound you hear is the signal that the remote controller address has been changed.

(7) Finally press the remote controller ACL (Reset) button to cancel the blinking “oP-7” display. (Fig. 39)

Changing of the second remote controller address is now completed.

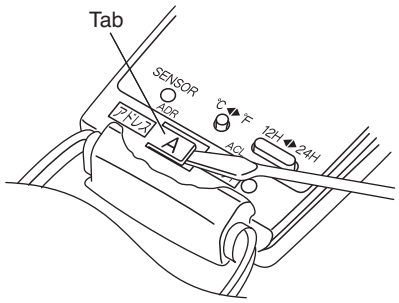


Fig. 37

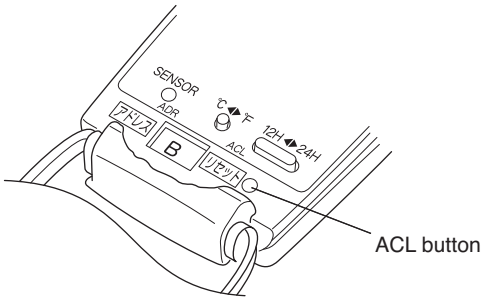


Fig. 38

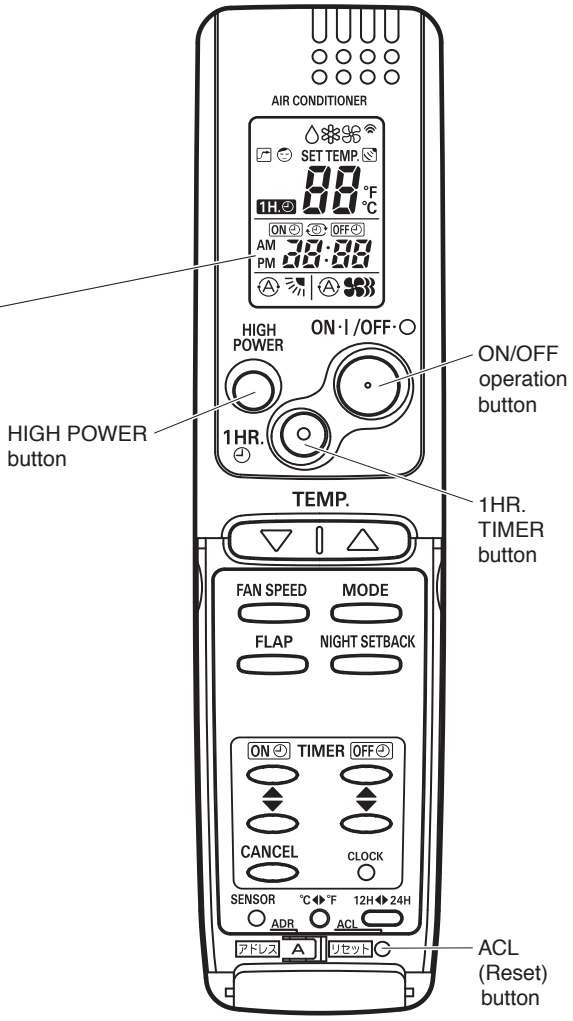


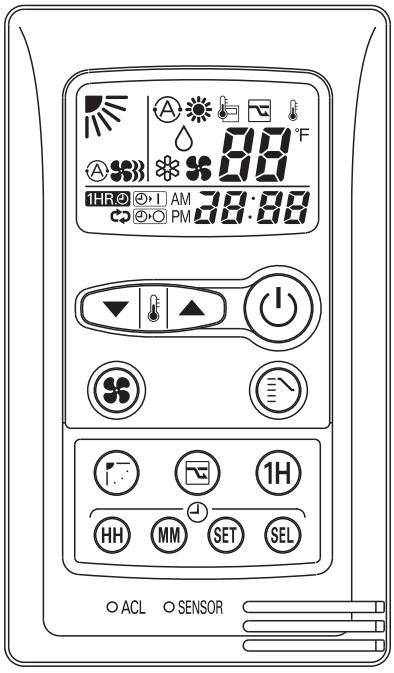
Fig. 39

APPENDIX C Operating Instructions

CZ-RD515U

(852-6-4181-230-00-1)

Panasonic



Operating Instructions
Wired Remote Controller

Model No. CZ-RD515U

This wired remote controller is designed for both the “COOL/DRY/HEAT Model” and “COOL/DRY Model” indoor unit.

Once the wired remote controller is connected, the wireless remote controller cannot be used.

Before operating the unit, read these operating instructions thoroughly and keep them for future reference.

Panasonic Corporation
1006 Kadoma, Kadoma City, Osaka, Japan

85264181230001

CV6233187877

FEATURES

- **Microprocessor Controlled Operation**
  The interior compartment of the remote controller contains several features to facilitate automatic operation, easy logically displayed for easy use.
- **24-Hour ON or OFF Timer**
  This timer can be set to automatically turn the unit on or off at any time within a 24 hour period.
- **1-Hour OFF Timer**
  This timer can be set to automatically turn off the unit at any time after one hour.
- **Night Setback**
  This function saves energy by controlling operation to provide a quieter operating sound than normal.
- **Automatic and 3-step Fan Speed**
  Auto/High/Medium/Low
- **Air Sweep Control**
  This function moves a flap up and down in the air outlet, directing air in a sweeping motion around the room and providing comfort in every corner.
- **Automatic Restart Function for Power Failure**
  Even when power failure occurs, preset programmed operation can be reactivated once power resumes.
- **Automatic Switching between Cooling and Heating**
  This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.
  (This function is available only for “Single use” of COOL/DRY/HEAT Model.)
- **Hot Start Heating System**
  Right from the start, the air is warm and comfortable. This system prevents any cold blasts at the beginning while the heat pump is warming up, or even defrosting.
  (This function is available only for COOL/DRY/HEAT Model.)

NOTE

- Since the wired remote controller is designed to be commonly used for various air conditioners, some of the functions of the wireless remote controller supplied with the indoor unit cannot be used.
- “Single use” means that only one indoor unit is connected with one outdoor unit in a one-unit-to-one-unit configuration.
- “Multiple use” (i.e. Flexi-Multi system) means that two or more indoor units are connected with one outdoor unit in a multiple-unit-to-one-unit configuration.

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PRODUCT INFORMATION

If you have problems or questions concerning your wired remote controller, you will need the following information.

Model No. _____

Date of purchase _____

Dealer’s address _____

Phone number _____

SAFETY PRECAUTIONS

The following symbols used in this manual, alert you to potentially dangerous conditions to users, service personnel or the appliance:

WARNING **This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.**

CAUTION **This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.**

INSTALLATION LOCATION

We recommend that this wired remote controller be installed properly by qualified installation technicians in accordance with the Installation Instructions provided with the unit.

WARNING

- **Do not install this wired remote controller where there are fumes or flammable gases, or in an extremely humid space such as a greenhouse.**
- **Do not install the wired remote controller where excessively high heat-generating objects are placed.**

Avoid:

To protect the air conditioner from heavy corrosion, avoid installing the outdoor unit where salty sea water can splash directly onto it or in sulphurous air near a spa.

ELECTRICAL REQUIREMENTS

1. All wiring must conform to the local electrical codes. Consult your dealer or a qualified electrician for details.
2. Each unit must be properly grounded with a ground (or earth) wire or through the supply wiring.
3. Wiring must be done by a qualified electrician.

NOTE

Pull off the power plug from a receptacle, or switch off the breaker, or switch off the power disconnecting mean to isolate the air conditioner from the main power supply when not in use for a long time.

SAFETY INSTRUCTIONS

- **Read this Instruction Manual carefully before using this air conditioner. If you still have any difficulties or problems, consult your dealer for help.**
- **This air conditioner is designed to give you comfortable room conditions. Use this only for its intended purpose as described in this Instruction Manual.**

WARNING

- **Confirm to authorized dealer or specialist on usage of specified refrigerant type.**
  Using of refrigerant other than the specified type may cause product damage, burst and injury etc.
- **Never touch the unit with wet hands.**
- **Never use or store gasoline or other flammable vapor or liquid near the air conditioner — it is very dangerous.**
- **Do not use this appliance in a potentially explosive atmosphere.**
- **This air conditioner has no ventilator for intaking fresh air from outdoors. You must open doors or windows frequently when you use gas or oil heating appliances in the same room, which consume a lot of oxygen from the air. Otherwise there is a risk of suffocation in an extreme case.**
- **Do not swallow the battery.**
- **After removing the battery from remote controller, keep it away from the reach of children. The battery can cause death by suffocation if swallowed.**
- **To prevent possible hazards from insulation failure, the unit must be grounded.**
- **Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.**
- **In case of malfunction of this appliance, do not repair by yourself. Contact to the sales dealer or service dealer for a repair.**
- **Refrigerant gas leakage may cause fire.**
- **For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.**
- **Pull off the power plug from a receptacle, or switch off the breaker, or switch off the power disconnecting mean to isolate the air conditioner from the main power supply in case of emergency.**

CAUTION

- **Do not turn the air conditioner on and off from the power mains switch. Use the ON/OFF operation button.**
- **Do not stick anything into the air outlet of the outdoor unit. This is dangerous because the fan is rotating at high speed.**
- **Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.**
- **Keep the fire alarm and the air outlet at least 1.5m away from the unit.**
- **Do not let children play with the air conditioner.**
- **Do not cool or heat the room too much if babies or invalids are present.**
- **Do not sit or step on the unit. You may fall down accidentally.**
- **Do not stick any object into the FAN CASE. You may be injured and the unit may be damaged.**

NOTICE

- **This device complies with part 15 of the FCC Rules.** Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- **This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules.**
  These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- FCC Caution: To assure continued compliance, follow the attached installation instructions. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

EG

REMOTE CONTROLLER

NOTE

The descriptions on the AUTO (Ⓐ) or HEAT (☼) operation mode are only for the "COOL/DRY/HEAT Model," and not for the "COOL/DRY Model."

Display

Information on the operating conditions is displayed while the remote controller is switched on. If the unit is turned off, only the mode that was set previously is still displayed.

Temperature setting buttons (TEMP.)

Press the ▲ button to increase the set temperature.

Press the ▼ button to reduce the set temperature.

The temperature setting changes by 2 °F each time one of the TEMP. buttons is pressed.

FAN SPEED selector button

Ⓐ : The air conditioner automatically decides the fan speeds.

: High fan speed

: Medium fan speed

: Low fan speed

NIGHT SETBACK button

For details, see "5. Night Setback Mode". When you press this button in the HEAT, DRY or COOL mode, the mark appears in the display, and the remote controller will automatically adjust the set temperature to save energy.

FLAP button

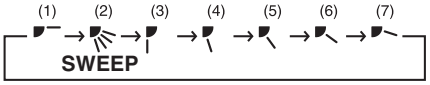
Press this button either to select the setting of the airflow direction to one of the six possible positions manually or to select the sweep function which moves the flap up and down automatically.

: The airflow direction can be set manually. (six positions)

: The flap moves up and down automatically.

NOTE

When you press the FLAP button, the air flow direction will be changed one by one as follows.



Timer and Present Time setting buttons

First, press the SET button to select the mode (ON, OFF and Present Time settings) you want.

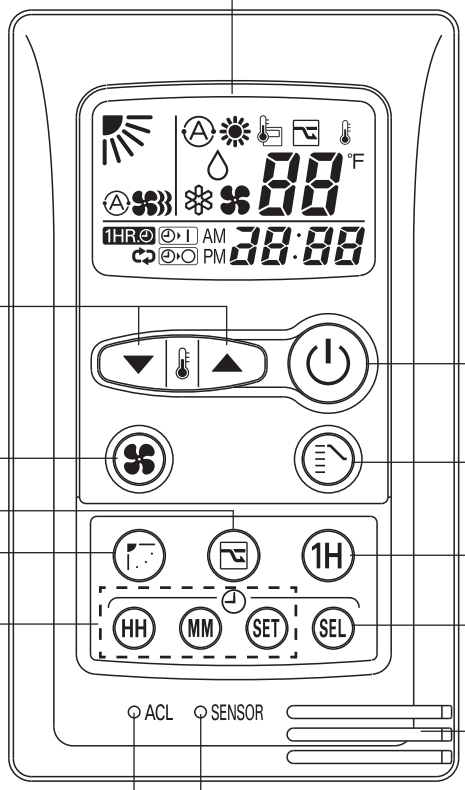
Each time you press the "HH" button, the hours advance by one. (PM0, PM1.....PM11, AM0, AM1.....AM11)

Each time you press the "MM" button, the minutes advance by one when setting Present Time and by ten when setting ON and OFF Time.

SET button

For details, see "SETTING THE TIMER".

Press this button to select the mode you want to program.



ACL button (ALL CLEAR)

When you press the ACL button while the operation button is ON, all settings are cleared. Press the ACL button if the air conditioner is not operating correctly.

ON/OFF operation button
This button is for turning the air conditioner on and off.

MODE selector button
Use this button to select AUTO, HEAT, DRY, COOL or FAN mode.

- **(AUTO)** Ⓐ : When this setting is selected, the air conditioner calculates the difference between the thermostat setting and the room temperature and automatically switches to the “COOL” or “HEAT” mode as appropriate. (This function is available only for “Single use” of COOL/DRY/HEAT Model.)
- **(HEAT)** ☼ : The air conditioner makes the room warmer.
- **(DRY)** ◇ : The air conditioner reduces the humidity in the room.
- **(COOL)** ❄ : The air conditioner makes the room cooler.
- **(FAN)** ✣ : The air conditioner works only as a circulation fan except for “Multiple use” of COOL/DRY/HEAT Model.

1 HR. TIMER button (1-HOUR OFF TIMER)

1HR. : When you press this button, regardless of whether the unit is operating or stopping, the unit operates for one hour and then shuts down.

TIMER SELECT button

No display : The timer does not operate.

: The air conditioner starts at the set time.

: The air conditioner stops at the set time.

: The air conditioner stops and starts, or starts and stops, at the set times every day.

Sensor
A temperature sensor inside the remote controller senses the room temperature.

SENSOR button
When you press this button (use a small-tipped object such as a ballpoint pen), the mark will disappear at the display. And the room temperature is detected by the sensor which is built into the remote controller and the air conditioner is controlled accordingly.

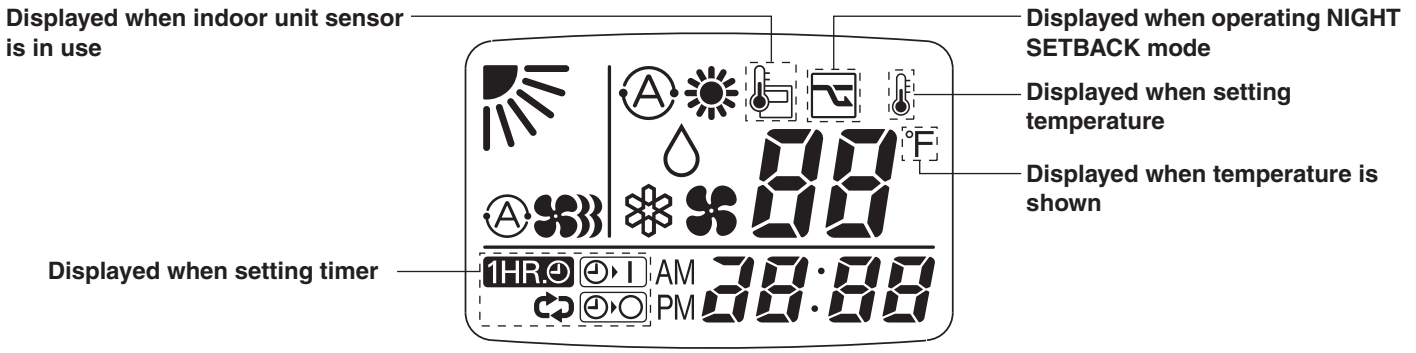
NOTE

If the remote controller is located near a heat source, such as a space heater or in direct sunlight, press the SENSOR button to switch to the sensor on the indoor unit.

NOTE

The indoor fan runs continuously when the system is in normal operation. It does not turn off when the desired room temperature is reached. If Night Set Back mode is selected, the fan will turn off intermittently during cooling operation in order to control air flow.

REMOTE CONTROLLER (DISPLAY)



Symbols

(1) Operation mode

AUTO ..... (only for COOL/DRY/HEAT Model)

HEAT ..... (only for COOL/DRY/HEAT Model)

MILD DRY .....

COOL.....

FAN .....

(2) Fan speed

Automatic operation .....

HIGH .....

MEDIUM.....

LOW .....

(3) Temperature setting

60 – 86 °F .....

When set to 80 °F temperature indication .....

(4) Timer

24-hour clock with ON/OFF program Timer .....

ON Timer. .....

OFF Timer. .....

1-hour OFF Timer. .....

(5) NIGHT SETBACK.....

(6) Flap angle indication.....

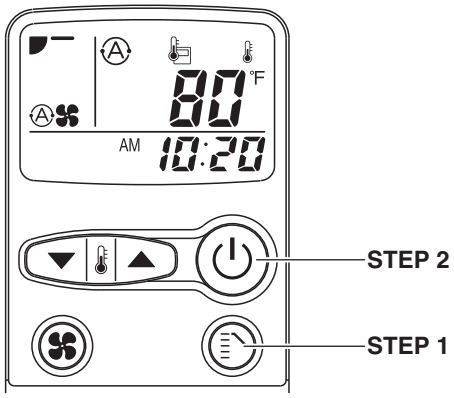
Sweep indication.....

OPERATION WITH THE REMOTE CONTROLLER

EG

1. Automatic Operation (only for COOL/DRY/HEAT Model)

- Single use
  This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.
- Multiple use
  The air conditioner calculates the difference between the thermostat setting and room temperature, and automatically determines the mode to operate under cooling or heating. Then, the air conditioner continuously operates under the mode selected at initial operation.



NOTE Check that the circuit breaker on the power panel is turned on.

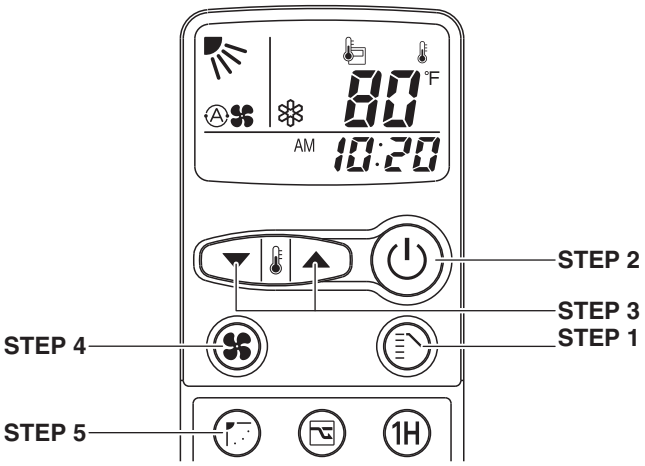
Once Ⓐ mode is selected and the unit is preset by following the steps below, you can have the air conditioner automatically bring the room to the desired temperature simply by pressing the ON/OFF operation button.

STEP 1	Press the MODE selector button to Ⓐ.
STEP 2	Press the ON/OFF operation button.

To stop the air conditioner, press the ON/OFF operation button again.

NOTE To change the temperature setting; press the temperature setting buttons and change the setting to the desired temperature.

2. Manual Operation



NOTE Check that the circuit breaker on the power panel is turned on.

If the automatic operation settings of the unit do not meet your needs, press the setting buttons as described below and change the settings as desired.

STEP 1	Press the MODE selector button and select the desired mode. For heating operation → For dehumidifying operation → For cooling operation → For fan only operation → (No Fan mode in “Multiple use” of COOL/DRY/HEAT Model)
STEP 2	To start the air conditioner, press the ON/OFF operation button.
STEP 3	Press the TEMP. setting buttons to change the temperature setting to the desired temperature. Adjustable temperature range: 86 °F max. 60 °F min.
STEP 4	Set the FAN SPEED selector button to the setting you want.
STEP 5	Press the FLAP button and set the airflow direction as desired. (Refer to “ADJUSTING THE AIRFLOW DIRECTION” on page 10.)

To stop the air conditioner, press the ON/OFF operation button again.

NOTE

- Choose the best position in the room for the remote controller, which also acts as the sensor for room comfort and transmits the operating instructions. Once you’ve found this best position, always keep the remote controller there.
- This appliance has a built-in 5-minute time delay circuit to ensure reliable operation. When the operation button is pressed, the compressor will start running within three minutes. In the event of power failure, the unit will stop.
- The display on the remote controller shows the setting temperature and not the room temperature.
- When multiple indoor units are used and units in other rooms are already operating, they will be operating with the same mode as the operating indoor units. (only for “Multiple use” of COOL/DRY/HEAT Model)

3. Adjusting the Fan Speed

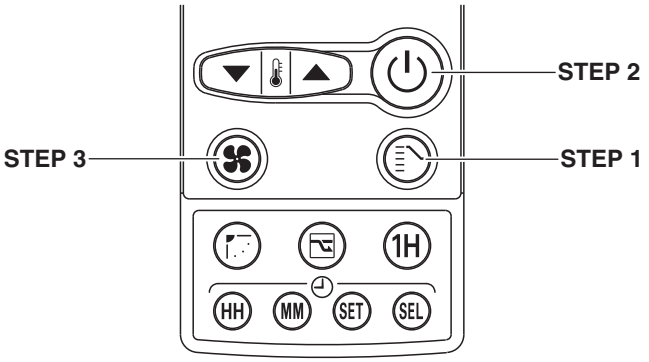
A. Automatic fan speed

Simply set the FAN SPEED selector button to the Ⓐ position.
This automatically sets the best fan speed for the room temperature.

B. Manual fan speed

If you want to adjust fan speed manually during operation, just set the FAN SPEED selector button as desired. [, , or]

4. Fan Only

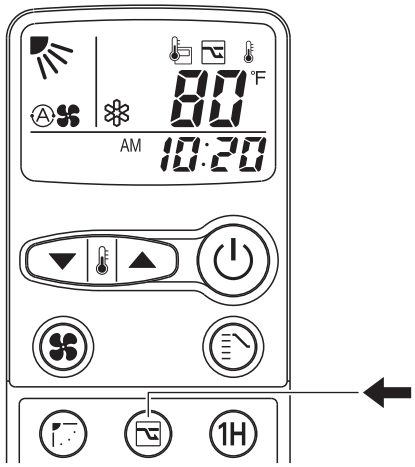


If you want to circulate air without any temperature control, follow these steps:

STEP 1	Press the MODE selector button to switch to the fan mode .
STEP 2	Press the ON/OFF operation button.
STEP 3	Press the FAN SPEED selector button to select the fan speed of your choice (, or).

NOTE There is no FAN only function in “Multiple use” of COOL/DRY/HEAT Model.

5. Night Setback Mode



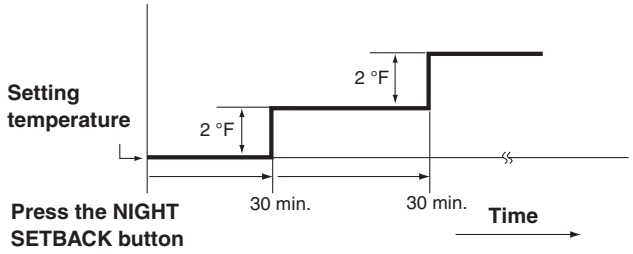
Night Setback Mode is used for saving energy.

Press the NIGHT SETBACK button while unit is operating.
The mark appears in the display.

To release the night setback function, press the NIGHT SETBACK button again.

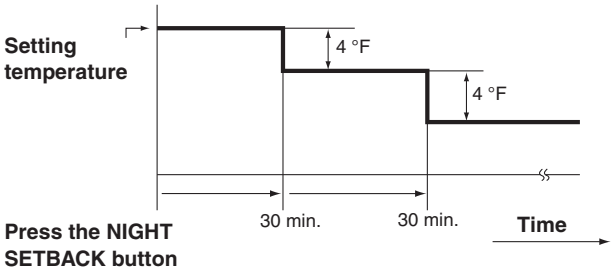
A. In Cooling and DRY Mode: (and)

When the night setback mode is selected, the air conditioner automatically raises the temperature setting 2 °F when 30 minutes have passed after the selection was made, and then another 2 °F after another 30 minutes have passed, regardless of the indoor temperature when night setback was selected. This enables you to save energy without sacrificing comfort. This function is convenient when gentle cooling is needed.



B. In Heating Mode: ( )
(only for COOL/DRY/HEAT Model)

When the night setback mode is selected, the air conditioner automatically lowers the temperature setting 4 °F when 30 minutes have passed after the selection was made, and then another 4 °F after another 30 minutes have passed, regardless of the indoor temperature when night setback was selected. This enables you to save energy without sacrificing comfort. This function is convenient when gentle heating is needed.



SPECIAL REMARKS

Power failure during operation

In the event of power failure, the unit will stop. When the power is resumed within 8 hours, the unit will restart automatically in approximately five minutes, or 15 minutes in “Multiple use” of COOL/DRY/HEAT Model on AUTO mode by the remote controller.

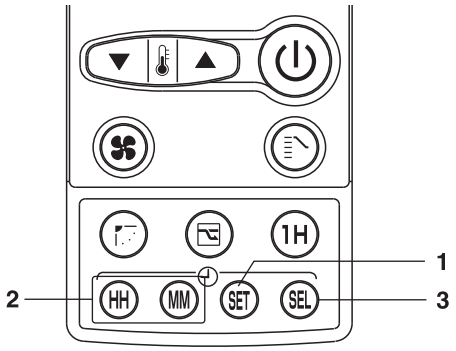
Remote Controller

The remote controller sends the setting condition to the air conditioner regularly at five minute intervals.

Remote Controller Display

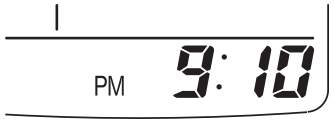
If the display malfunctions, press the ACL button.
This resets the remote controller back to the initial settings.
Make the settings again.

SETTING THE TIMER



1. How to set the present time

(Example) To set to 9:10 pm.



Operation	Indication
1. Press the SET button three times.	The time indication alone flashes.
2. • Press the HH button until PM 9 is displayed. • Press the MM button until 10 is displayed.	The display will flash for 10 sec. and automatically stop flashing except for the " : " symbol.

2. How to set the OFF time

(Example) To stop the air conditioner at 11:30 pm.

OFF TIME **Present time**

Operation	Indication
1. Press the SET button twice.	The timer ⏲○ indication alone flashes and the previous set-time is only displayed.
2. • Press the HH button until PM 11 is displayed. • Press the MM button until 30 is displayed.	The display will change automatically back to show the present time after about 10 sec.
3. Press the TIMER SELECT button twice to set OFF time.	The present time and ⏲○ are displayed.

To cancel the setting, press the TIMER SELECT button twice.

3. How to set the ON time

(Example) To start operation at 7:10 am.

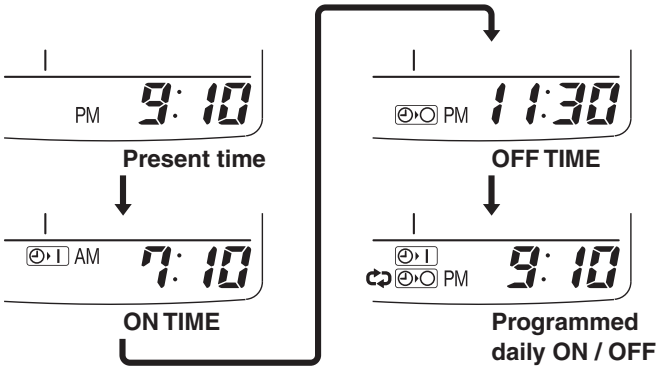
ON TIME **Present time**

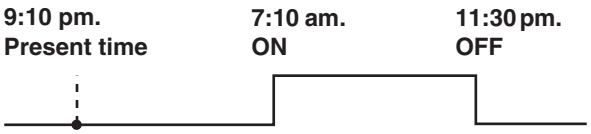
Operation	Indication
1. Press the SET button once.	The timer ⏲| indication alone flashes and the previous set-time is only displayed.
2. • Press the HH button until AM 7 is displayed. • Press the MM button until 10 is displayed.	The display will change automatically back to show the present time after about 10 sec.
3. Press the TIMER SELECT button once to set ON time.	The present time and ⏲| are displayed.

To cancel the setting, press the TIMER SELECT button three times.

4. How to set daily ON/OFF repeat timer

(Example) To start operation at 7:10 am. and stop the air conditioner at 11:30 pm.





Operation	Indication
Set the timer ON/OFF times as shown in 2 and 3.	The present time PM 9:10 and ⏲| ⟲ ⏲○ are displayed.

To cancel the setting, press the TIMER SELECT button once.

NOTE

You can check the timer ON/OFF times after you have set them by pressing the SET button.

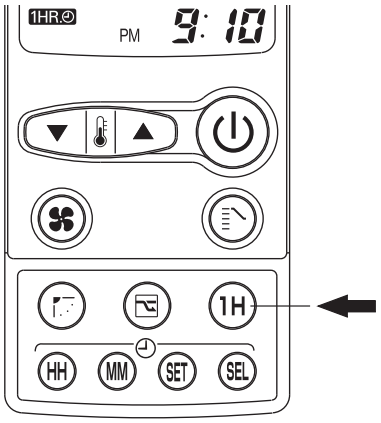
5. Backup function

Even if the main power supply to the unit is turned off, the remote controller will store the previous settings in its internal memory for up to 8 hours. If the power is not turned back on within 8 hours, the previous settings will be lost. In this case, the mode settings must be reset by the user.

EG

USING THE 1-HOUR OFF TIMER

1. 1-Hour OFF Timer



This function causes the unit to operate for one hour and then stop, regardless of whether the unit is on or off when this button is pressed.

The 1HR. indicator in the display indicates that this function is operating.

Setting procedure:

Regardless of whether the unit is operating or stopped, press the 1 HR. TIMER button.

1HR. appears in the display.

Cancellation procedure:

Press the ON/OFF operation button to turn the unit off, wait for the unit to stop operating, and then press the ON/OFF operation button again.

The 1-Hour Timer function is now cancelled and the unit operates normally.

NOTE

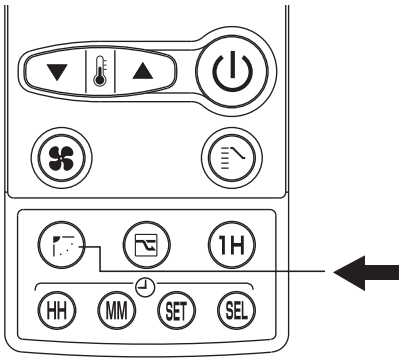
- If, while the 1-Hour Timer function is operating, the 1HR. TIMER button is pressed once to cancel the function and then again, the unit continues to operate for one hour from that point in time and then stops.
- It is not possible to use the OFF Timer and 1-Hour OFF Timer together. Whichever function is set last takes precedence. If the 1 HR. TIMER button is pressed while the TIMER OFF function operates, the OFF Timer is cancelled and the unit will stop operating one hour later.

2. Operation together with the daily ON/OFF repeat timer

The 1-Hour OFF Timer setting is given priority over the DAILY ON/ OFF REPEAT setting.

ADJUSTING THE AIRFLOW DIRECTION

The vertical airflow can be adjusted by moving the flap with the remote controller. Do not move the flap with your hands. Confirm that the remote controller has been turned on. Use the FLAP button to set either the sweep function or one of the six airflow direction settings.

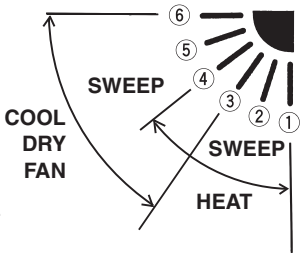


A. Sweep function

The flap starts moving up and down to deliver air over the sweep range.

B. Setting the airflow manually

Referring to the above illustration, use the FLAP button to set the airflow direction within the range used during the heating, cooling, or dehumidifying operation.



NOTE

- The flap automatically closes when the unit is off.
- During the heating operation, the fan speed will be very low and the flap will be in the horizontal position (position ⑥) until the air being blown out of the unit begins to warm. Once the air warms up, the flap position and fan speed change to the settings specified with the remote controller.

CAUTION

- **Use the FLAP button on the remote controller to adjust the position of the flap. If you move the flap by hand, the flap position according to the remote controller and the actual flap position may no longer match. If this should happen, shut off the unit, wait for the flap to close, and then turn on the unit again; the flap position will now be normal again.**
- **Do not have the flap pointed down during cooling operation. Condensation may begin to form around the air vent and drip down.**

APPENDIX D INSTALLATION INSTRUCTIONS

CZ-RD515U

(852-6-4190-592-00-0)

INSTALLATION INSTRUCTIONS
Wired Remote Controller

Panasonic

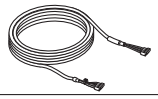
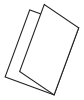
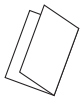
IMPORTANT

- In order to install this wired remote controller onto a wall-mounted model, the connection kit (CZ-RC515U or CZ-RC515UA), which must be purchased separately, is required.
- Once the wired remote controller is connected, the wireless remote controller cannot be used.

■ Parts supplied with the remote controller

See Table 1.

Table 1

Parts	Figure	Q'ty	Parts	Figure	Q'ty
Wired remote controller		1	Wire harness	26.2 ft. (8m) 	1
Machine screws	5/32× 15/16" (4×25mm)	2	Instruction manual		1
Tapping screws	5/32× 15/16" (4×25mm)	2	Installation Instructions		1
Spacers		2			

■ Remote controller installation guidelines

Installation location

- Mount the remote controller 3.3 to 4.9 ft. (1 to 1.5 meters) off the floor where it can sense the average temperature of the room.
- Do not mount the remote controller in a place exposed to direct sunlight or where it is exposed to outside air such as near a window.
- Do not mount the remote controller behind a curtain or other object so that it is separated from the air circulation of the room.
- Mount the remote controller inside the room being air conditioned.

Switching the room temperature sensor

Room temperature sensors are separately incorporated in both the indoor unit and the remote controller. Either sensor can be used to sense the room temperature. The indoor unit sensor is usually used.

If you wish the remote controller to sense the room temperature, press the SENSOR button with a ballpoint pen or tool with a small tip. (Refer to Fig. 9 on page 4 to locate the SENSOR button.)

■ How to install the remote controller

IMPORTANT

- The remote controller is set to “Cool/Dry/Heat model” at the time of shipment from the factory. If the purchased air conditioner is a COOL/DRY model, follow the instructions on the label and change the switch on the reverse side of the remote controller unit to “Cool/Dry model”. (Fig. 1)
- The remote controller is also set to “Single” at the time of shipment from the factory. For multiple use, set the switch on the reverse side of the remote controller unit to “Multi”. (Fig. 1)
- After all work is completed, if any switches have been changed, then be sure to press the ACL (Reset) button. (Refer to Fig. 9 on page 4 to locate the ACL (Reset) button.)

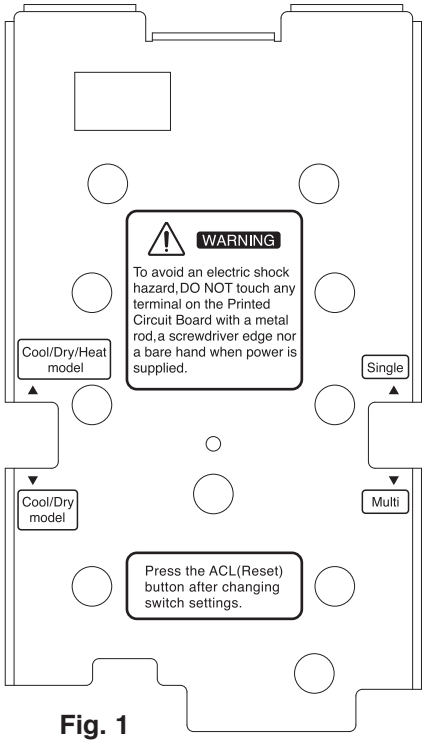

WARNING
To avoid an electric shock hazard, DO NOT touch any terminal on the Printed Circuit Board with a metal rod, a screwdriver edge nor a bare hand when power is supplied.
Cool/Dry/Heat model
Single
Cool/Dry model
Multi
Press the ACL(Reset) button after changing switch settings.

Fig. 1

A. Installing with in-wall junction box

(1) Install the junction box (locally purchased) into the wall. (Figs. 2-a and 3)

(2) Pass the wire harness through the junction box and conduit. (Fig. 3)

(3) Insert a flathead screwdriver into the 5 tab locations and disconnect the back plate of the remote controller by lifting up slightly. (Fig. 2-b)
The tabs are thin; take care not to chip them.

(4) Pass the wire harness connector through the cord opening on the back plate of the remote controller.
Use nippers or a similar tool to cut out the slots for the remote controller back plate screws. Insert the spacers and use the machine screws to install the remote controller back plate. (Fig. 3)

(5) Insert the connector into the PCB of the remote controller unit, and wrap the wire harness around the hook. (Fig. 4)

(6) Store the excess wire harness inside the junction box, then hook the remote controller unit onto the top of the back plate and install the remote controller unit.

(7) To remove the remote controller unit after it has been installed, insert a flathead screwdriver into the slot on the bottom of the case and turn it. (Fig. 5)

B. Installing directly onto the wall

(1) Insert a flathead screwdriver into the 5 tab locations and disconnect the back plate of the remote controller by lifting up slightly. (Fig. 2-b)
The tabs are thin; take care not to chip them.

(2) Use tapping screws to directly fasten the remote controller back plate onto the wall. (Fig. 6)

(3) Insert the connector into the PCB of the remote controller unit, and wrap the wire harness around the hook. (Fig. 4)

(4) Use nippers or a similar tool to cut out the slot on the top of the remote controller unit. Pass the wire harness through the slot, then hook the remote controller unit onto the top of the back plate and install the remote controller unit.

(5) In order to conceal the exposed wiring, use a wire cover (locally purchased) or similar means.

NOTE

- When installing the remote controller back plate, be sure that it is flat and straight. Do not over-tighten the installation screws.
- Install the remote controller away from all sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

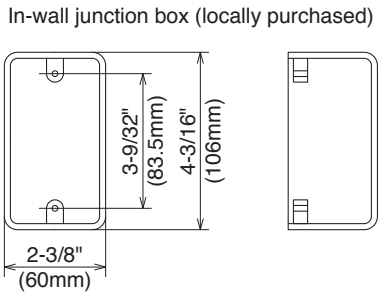


Fig. 2-a

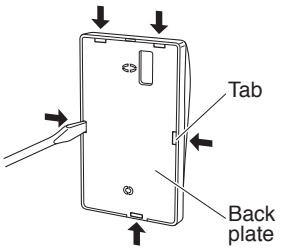


Fig. 2-b

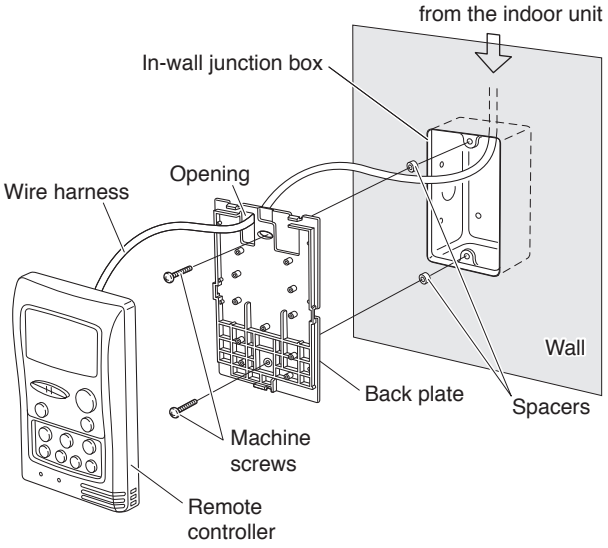


Fig. 3

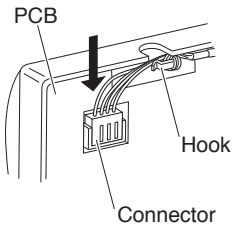


Fig. 4

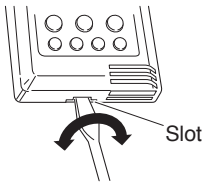


Fig. 5

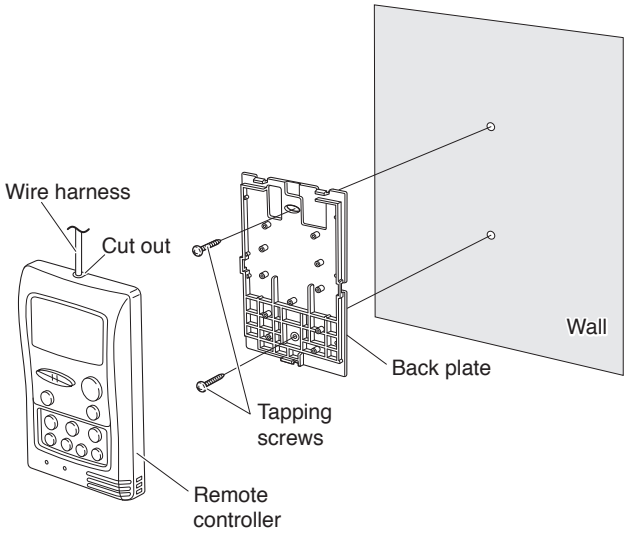


Fig. 6

■ How to wire the remote controller

(1) Turn OFF the power and remove the ceiling panel air-intake grille. (Refer to **3-6-1 Before Installing the Ceiling Panel** in the Installation Instructions supplied with the indoor unit.)

(2) Remove the 3 power box cover screws and 2 control box cover screws, then remove both covers. At this time, take care not to drop the covers. (Fig. 7)

(3) Disconnect the 7P (IND) terminal and 4P (RC) terminal of the 7P IND and 4P RC wiring connectors and the 5P terminal of the 5P FLAP wiring connector from the control box PCB connectors (IND, RC, FLAP). Disconnect each wiring connector from the clamp that fastens it. (Fig. 7)

(4) Remove the ceiling panel. (To remove the ceiling panel, follow the steps for **3-6 How to Install the Ceiling Panel** in the reverse order. Refer to the Installation Instructions supplied with the indoor unit.)

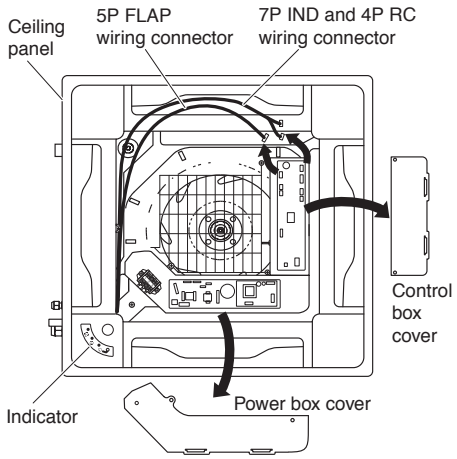


Fig. 7

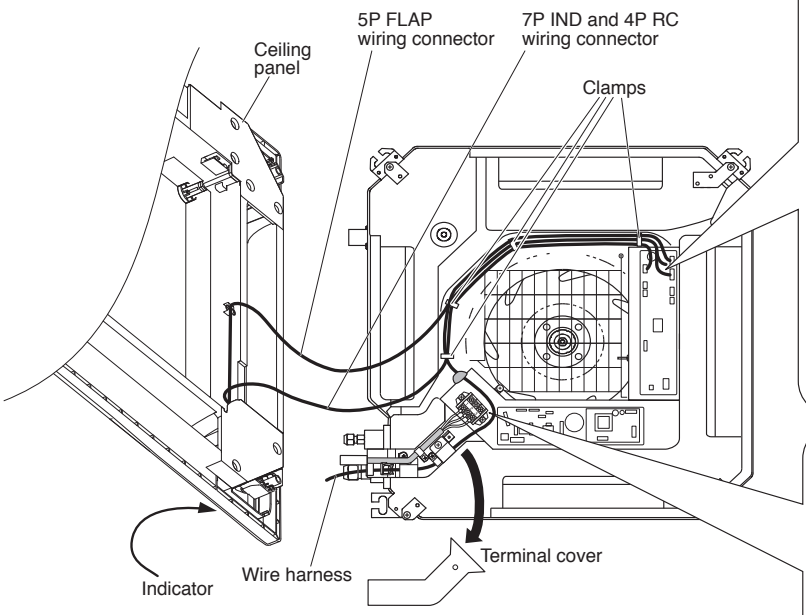
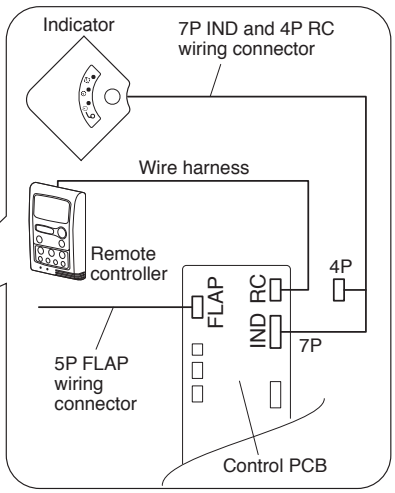


Fig. 8

Fig. 8-a



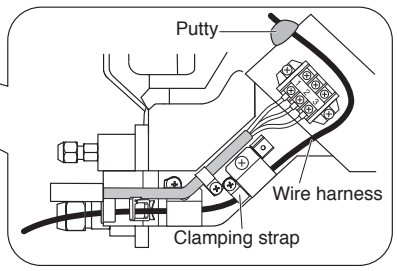


Fig. 8-b

(5) Remove the terminal cover screws, then remove the cover. At this time, take care not to drop the cover. (Fig. 8)

(6) Pull in the wire harness from the remote controller as shown in Fig. 8-b.
• Remove the putty before wiring. After wiring, make sure to restore the putty.

(7) Insert the wire harness 4P terminal into the control box PCB connector (RC). (Fig. 8-a)

(8) Install the terminal cover. Then install the ceiling panel. (Refer to **3-6 How to Install the Ceiling Panel** in the Installation Instructions supplied with the indoor unit.)

(9) Insert only the 7P (IND) terminal of the 7P IND and 4P RC wiring connector into the connector (IND) on the control box PCB. Store the 4P terminal inside the control box. (Fig. 8-a)

(10) Next, insert the 5P terminal of the 5P FLAP wiring connector into the connector (FLAP) on the control box PCB. (Fig. 8-a)

(11) When the connections are completed, fasten the wire harness and each wiring connector with the clamps.

(12) Install the power box cover and control box cover.

(13) Install the air-intake grille. (Refer to **3-6 How to Install the Ceiling Panel** in the Installation Instructions supplied with the indoor unit.)

■ How to Test Run the Air Conditioner

After turning on the power of the air conditioner, use the remote controller and follow the steps below to conduct the test run.

(1) Set the remote controller in Test Run mode. (Fig. 9)

a) Press and hold the NIGHT SETBACK button and the 1HR. TIMER button.

b) Then press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first.

c) Then release the NIGHT SETBACK and 1HR. TIMER buttons.

d) ❄ appears and "oP-1" blinking in the remote controller clock display area. (Fig. 10)

(2) Start Cooling mode test run by pressing the ON/OFF operation button of the remote controller. (Fig. 9)

- This starts the fan producing uncooled forced air with the 3 indicator lamps (OPERATION lamp, TIMER lamp, and HIGH POWER lamp) on the main unit blinking. (Fig. 11)
- After 3 minutes, the system shifts into cooling operation, and cool air will start to be felt. Cooling mode test run is unaffected by the room temperature.

(3) Press the ON/OFF operation button of the remote controller again to stop the test run. (Fig. 9)

(4) Finally press the ACL (Reset) button of the remote controller to release it from Test Run mode to return to normal mode. (Fig. 9)

- "❄" and "oP-1" will disappear from the remote controller clock display area.

NOTE

Troubleshooting:
In the event that the green OPERATION lamp is blinking upon powering up the system, an error condition exists. In this case, refer to the self-diagnostics procedure which can be seen by opening the air-intake grille.

IMPORTANT

After the test run is completed, be sure to press the ACL (Reset) button to return to normal mode. The air conditioner will not operate correctly if this is not done.

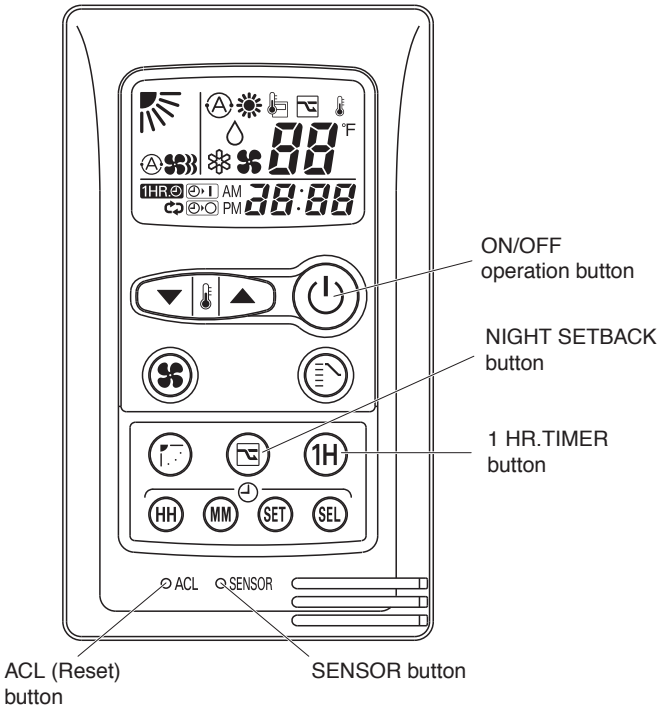


Fig. 9

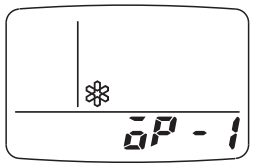


Fig. 10

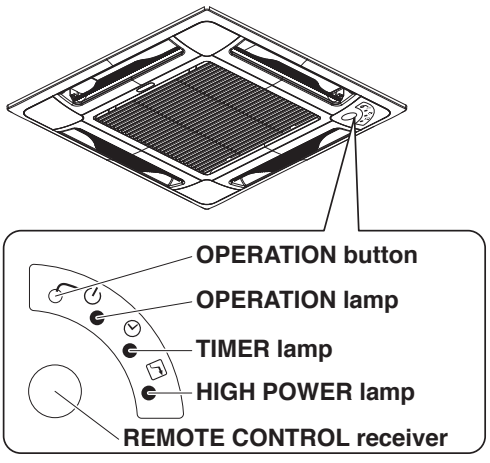


Fig. 11

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